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POLLUTION OF THE NAVIGABLE WATERS AND PUGET SOUND, THE STRAIT OF JUAN DE FUCA AND THEIR TRIBUTARIES AND ESTUARIES, WASHINGTON. PROCEEDINGS OF CONFERENCE SESSION (2ND) HELD AT SEATTLE, WASHINGTON ON SEPTEMBER 6-7 AND OCTOBER 6, 1967. VOLUME 2

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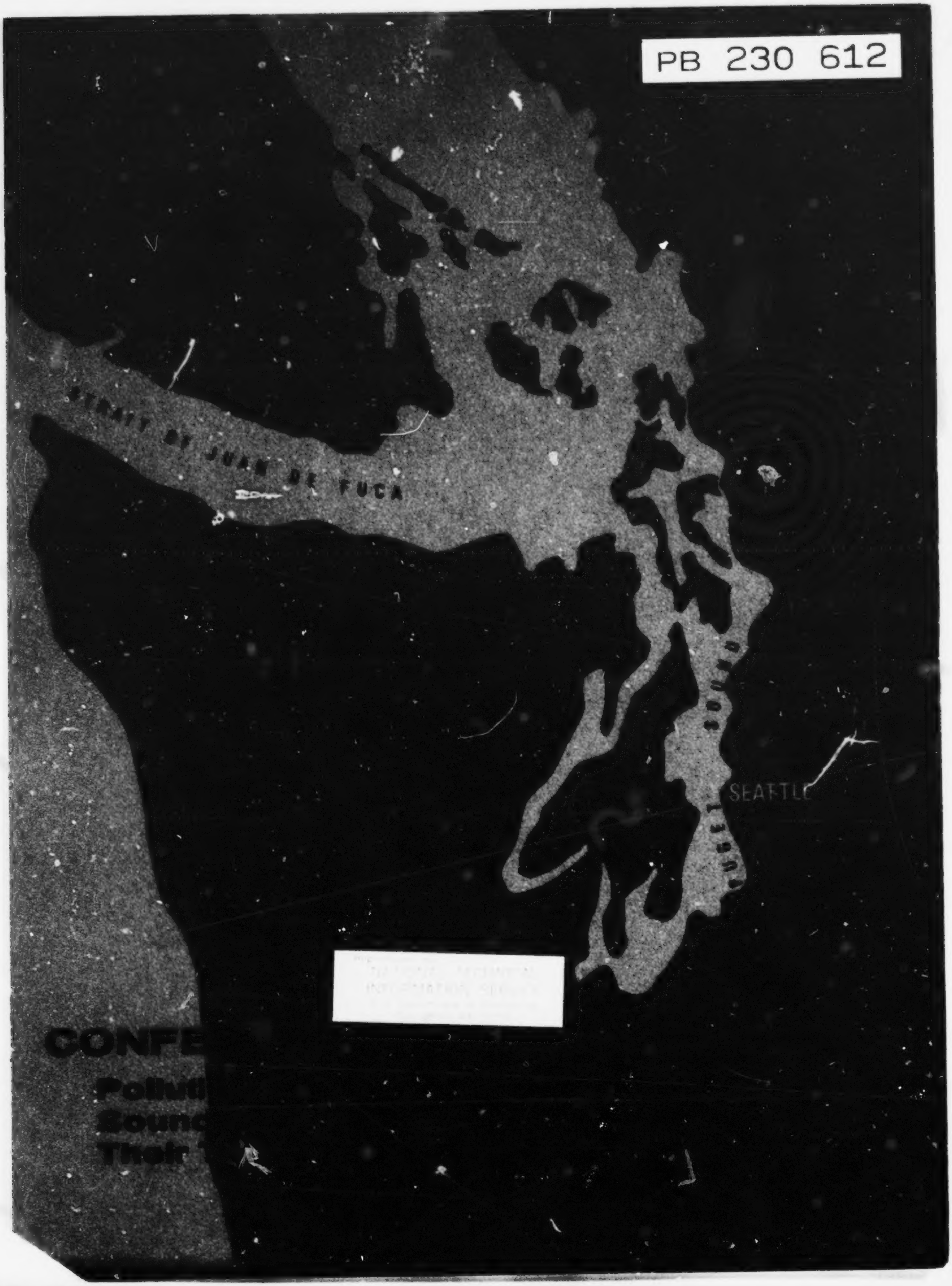

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MORNING SESSION, THURSDAY, SEPTEMBER 7, 1967

CHAIRMAN STEIN: May we reconvene?

Mr. Roy Harris will continue with the Washington invitees.

Mr. Harris.

PULP AND PAPER INDUSTRY PRESENTATION
(CONTINUED)

MR. HARRIS: Yesterday Mr. Benson indicated that he had a group of technical people he wished to call on individually. We got through three of his invitees.

The next member of his group will be Mr. Yentsch of the Woods Hole Oceanographic Institution.

STATEMENT OF CHARLES S. YENTSCH
OF THE
WOODS HOLE OCEANOGRAPHIC INSTITUTION

MR. YENTSCH: Mr. Chairman, Conferees, ladies and gentlemen.

My name is Charles Yentsch. I am officially known as a biological oceanographer, research associate, associated with the Woods Hole Oceanographic Institution. My research specialty lies in the discipline known as primary production, and actually this is a field which really concerns the measurement of environmental photosynthesis in aquatic situations.

CHARLES L. YENTSCH

Although my geographical area of interest is the areas of the western north Atlantic, I initially got my start in this field in the waters in and around Puget Sound, especially the San Juan Islands. Many of these studies, as well as more recent studies, have led me into situations such as I am in today. As a result of these situations, I have set certain guidelines or bases for the opinions that I am about to present, and I would like to discuss these a little bit with you before discussing the items pertinent to the section on plankton productivity in the Federal agency report.

It is certainly obvious to most of us here that the use of natural waters by industrial and public interests requires some controls. When a conflict of interest arises, it must be resolved by a critical study of the facts, and in my case, in my experience, arriving at these facts one must also always look into the economics, social situations, as well as the natural history conditions of the water. If controls are to be recommended, the group expected to bear the responsibilities for correcting the situation always have the right to ask:

1. Am I or the group the sole cause of the problem?

2. What and how valuable is the thing that

I am damaging?

3. How extensive is the damage?

And 4. Will the corrective measures insure me from future complaint?

In the case of water pollution, most all of these answers must come from a competent aquatic biologist and chemist, and these people must be familiar enough with the environment to accurately predict its future if this bad practice of waste disposal is to continue. Where a study situation is required, the most common approach is to compare some aspect of parameter of an environment known to be unpolluted with one that is suspect.

I would like to emphasize that the indicators of incipient pollution are not obvious, and they are so closely connected with the natural processes that change the physical and chemical properties of water that, unless the latter is carefully screened, the comparative approach is frequently hampered. I further emphasize that the strongest tool for determining the extent of pollution and proposing corrections is a thorough knowledge of the physical and biochemical processes in that environment. There is no substitute for this type of information.

With these considerations in mind, it was apparent to me that the most serious lack in the Federal report was over-all information concerning the environmental areas under question, and this is particularly true in the particular area that was surveyed for plankton productivity. Some of this information, when present, is so out of context with the tests made to determine the effects of the pollution that it would be very dangerous, in my opinion, even to attempt to answer the four questions that I have originally proposed should be answered for the people implicated in the study.

On the other hand, the biologists associated with the Federal agencies were indeed very wise to include studies of phytoplankton productivity in their study. As they rightly point out, these are the primary producers in the area and any serious damage to them can have dire consequences to the entire biota of the area. These organisms also recycle substances in solution very rapidly, and hence their growth activities are an extremely sensitive indicator to water quality.

To those of you who are unfamiliar with the activity of these organisms, let me just try to educate you a little. The growth activities of organisms such as the phytoplankton largely depend upon the amount of light and the availability of nutrients. To a stationary observer, the numbers of these organisms in the water will change as a result of a number of different factors, some of which are contained in the individual metabolic processes of the organism, others which result just merely from a sort of dynamics of the water movement. So to a stationary observer, their numbers may decrease as the result, for instance, of grazing planktonic herbivores, they can decrease by the mere fact that they are denser than the water which surrounds them and they sink out, or they may change just because the water is sloshing back and forth in front of the observer as a result of either tidal or general circulation of the water body.

I emphasize these points because in the study of the distribution and growth of phytoplankton in any area, stations have to be laid out so that the quasi-synoptic picture, physical and chemical parameters, can be obtained along with the measurements of the biology in which the investigator is interested.

With regard to the Federal report on the study of primary production, I really see no sense in presenting plankton data as an average value for 12 months for five stations, which appear to me to be poorly located in terms of the hydrograph and the general geography of the Everett and Port Gardner area. It is my experience that the day-to-day changes are so great that averages of this sort can be quite meaningless. Probably the best authority on the productivities of these waters, G. C. Anderson, reports--and this report is WP 0063, October 1966--that large scale features of the annual production are missed in the Puget Sound area unless one has daily sampling.

The strongest argument for the damage to the phytoplankton productivity by SWL as stated in the Federal report is reflected in values given for carbon fixation. Here I must confess I am confused with regard to the methods. It is not at all clear to me what type of experiments were performed here, and perhaps we can discuss this in more detail. It does state in the methods that the experiments were carried out in the light intensities in which the phytoplankton were grown. However, there is no indication of what these light intensities might be. I have a feeling that in the process of editing this report that part of these methods somehow got edited out, because I am sure that the biologists involved would want these to be indicated. What I have assumed is that these experiments represent the maximum rate at which the carbon production is being carried out by the phytoplankton at these stations, and to help some of you that aren't familiar with this sort of thing, I would like to point out that photosynthesis is not a direct function of light intensity. If one doesn't experiment--

CHAIRMAN STEIN: Mr. Yentsch, remember you are talking for the record and it is going to be difficult for any chart you draw on the board to be reproduced in the record, and I wondered if you would think of your presentation as someone is going to read it in the record. We don't edit anything out and that may be the trouble. It will appear verbatim.

MR. YENTSCH: Okay. I will try to explain it in simple enough fashion so that you won't need a graph.

CHAIRMAN STEIN: Right.

MR. YENTSCH: But I will put it on the board anyway.

Along the Y axis, if this (indicating) is photosynthesis, along the X axis if this (indicating) is light, increases in light intensity and photosynthesis follow a linear pattern up to around 10 or 20 percent of full sunlight. Beyond that point further increases in light are not elicited as further increases in photosynthesis. The reason for this is that photosynthetic process is largely controlled by enzymatic processes. At the point where the curve begins to flatten out it means that the enzymatic processes are just working as fast as they can and further increases in light will not be accompanied by further increases in photosynthesis because the whole rate is light saturated, that is that the enzymes just will not work the reaction any faster.

I am assuming that the biologists concerned with the measurements in this report have utilized this value as what I term the maximum or the light saturated rate of photosynthesis, and indeed I think they were very wise in doing this because this is a very sensitive indicator, a very good means of getting the pulse rate of a group of phytoplankton in any water mass.

The trouble with it, however, is that it is sensitive to practically every factor that one can think of that controls the growth rate of plants. And I don't wish to color this discussion with a great deal of technical jargon, but if one, for example, changes the water temperature, say, from 20 degrees to 10 degrees Centigrade, this reduces the carbon fixation rate of most phytoplankton by as much as about 25 percent. If you change it from 20 to 5 degrees, you can reduce the rate of carbon fixation about 75 percent. So my main point here is that very, very small changes, relatively small changes, in the environment can make very, very great changes in the maximum rate of photosynthesis.

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Temperature is only one of these factors. The light intensity at which the plants are grown also has the same sort of effect. The amount of carbon dioxide present, the amount of phosphate and nitrate also change this rate remarkably. Again I emphasize, unless these factors are carefully screened, it is very difficult to say anything about the maximum rate of photosynthesis.

Consistently the biologists in the Federal report found that the SWL introduction near the outfall was associated with a low value of carbon production, and it is indeed difficult for me to make any judgment why these values would be low. I should emphasize that biologists have used a rather primitive method of measuring the rate of carbon production. They have done this by measuring changes in dissolved oxygen. I am startled that the more modern, precise and accurate method of Carbon 14, the radioactive Carbon 14, was not utilized. The calculation of carbon production from oxygen requires a factor, and this factor can be quite variable and quite dependent upon the over-all metabolism of the organisms present.

To give you an example, at the point at which the SWL is introduced, I think everyone will agree that there is considerable amount of biological oxygen demand, and in the process of this demand ammonia is produced. Organisms photosynthesizing in this ammonia atmosphere are going to essentially fix less carbon per unit oxygen than organisms fixing carbon in waters where the primary nitrogen source is nitrate. So one has to be very careful how the assimilation coefficient is applied in this carbon calculation. Again I emphasize, and I think that the biologists involved would agree here, that this is a rather primitive method for determining carbon fixation. These data would have been much, much more significant if radioactive Carbon 14 had been utilized.

Finally I would like to say that proceedings of this Conference have amazed me as an outsider. In the part of the world I come from, which is in New England, people generally like to pride themselves on being individuals. The idea of cooperation at times takes on sort of dirty meanings. Some time back I became involved in a pollution study that involved two organisms, the oyster and the duck, if you can imagine this. The story is this:

The duck farmers of Long Island are very proud of their ducks, they like to have them big and flat and fat and fluffy at the time they go to the market. They force feed them initially by pouring on the Wheaties; in the process much of it comes out the other end rather untouched. This is washed into the embayments along Long

Island Sound, massive growths of phytoplankton result, these are sort of weeds in nature, and literally they lined up choking the oysters.

There is nothing so stubborn as a Yankee oysterman and nothing more unmovable than a Long Island duck farmer, and yet when these fellows were presented with the evidence they sat down and with the help of the Army Corps of Engineers solved the problems.

I can't see why the two groups involved here can't do something of the same order. The Federal and State agencies considering water pollution in this area are recognized throughout the country as some of the best. Certainly the mill people are reasonable and their credibility has been shown by the fact that they continue to support research and development. In this country the main problem in pollution, as I see it, is the problem of eutrophication. The eventual eutrophication of water bodies leads to an anerobic condition, the production of hydrogen sulphide, and the loss of useful biological productivity. The introduction of sulfite waste liquor, I think, is only one small segment of this problem. The problems are very, very diverse, there are many of them, and the time to solve these problems is awfully short.

I would like to close by just saying good luck.

CHAIRMAN STEIN: Thank you, Mr. Yentsch. Are there any comments or questions?

MR. HARRIS: I am lost here. (Laughter)

CHAIRMAN STEIN: Well, I think we can work this through and I think he knows what he is saying.

Mr. Yentsch, I am a little surprised, particularly on the recounting of the history of the oyster and duck operation. I know your scientific work wouldn't permit omissions like that, but in accounting that you didn't talk about the water pollution control agencies or our agency.

As a matter of fact, and I think the record will show this, the way the oyster and duck people got together was precisely at a Conference like this. The first time they sat down together--and I think the Oyster Growers Association and Mr. Gruble are aware of the situation--the first time they sat down together was when we met with each of them together and separately and persuaded them to get on a technical committee and sit down and work out a program. Now we have the program to go forward and it was precisely in a conference like this where it was successful.

The Corps of Engineers role in this operation is maintaining channels in several of those very islands we have in the east to provide a flushing action so that the salinity of the water will be appropriate for the shellfish. As a matter of fact, it wasn't just weeds that killed the oysters, but these oysters have been declared off limits by New York State for years.

I am always amazed--and this is a phrase you used several times--when I am a party to something and I hear the history recounted by someone else. But this is precisely what we are going to do.

You raised another point, and a philosophic point, about when a conflict of interest arises. I hope there is no conflict of interest.

I think your point is correct about the duck farmers and the oyster growers. They possibly, together with the pulp and paper manufacturers, are the only independent people we have in the country today, and getting them together was like getting the sheep growers and the cattlemen together in the old west. But when they got together they discovered that they did not have a conflict of interest.

I hope here, too, we are going to discover that we don't have a conflict of interest, because I have never seen one of these problems solved where we are talking in terms of conflict of interest.

I think the theme that we have put forth in Long Island was that the interests of the duck growers and the oystermen were the same. As a matter of fact, they both may be swept out if the suburbs and those houses keep coming out as they are growing up, and I think they recognize it.

MR. YENTSCH: You are wrong there (laughter), because the duck farmers didn't give a damn about Great South Bay.

CHAIRMAN STEIN: Sir, we have a complete record; we have dealt with the duck farmers.

You know, Mr. Yentsch, before you say anyone is wrong, my recommendation is that you read a verbatim transcript of the testimony, see what the duck farmers have said on this. In the same manner, it may have been appropriate before making the assumptions if you had consulted with our biologists, who are public officials and would have been glad to talk to you about their methodology. It is one thing to come to a conclusion and say that someone is wrong, but it is another thing when we have a complete and verbatim record to point this out. The duck farmers in Long Island have been most cooperative with us and working with the oyster growers on this, with the local officials, with the city officials, and they have been working with us in concert for the past year and the technical committee developing a program.

While we might not be as meticulous, say, as other nations--notably the Germans and the Japanese--in keeping records, we have a system in the United States where the bureaucracy keeps records. We have records of all these meetings, verbatim transcripts of many of the meetings, and before we say that the duck farmers didn't give a darn about the bay or anything of that kind, let's not rewrite history at a 3,000-mile distance without at least going to the record.

Do you want to say anything else?

MR. YENTSCH: No.

CHAIRMAN STEIN: Thank you.

MR. YENTSCH: Yes, I would.

CHAIRMAN STEIN: Go ahead.

MR. YENTSCH: Why weren't up-to-date methods applied to the study of phytoplankton?

CHAIRMAN STEIN: Well, here, you have an assumption. If you want to engage in a colloquy like that, we will be glad to call a biologist.

This is a Conference and not a court. When you ask the question why were not up-to-date methods used, you know, that is like when did you stop beating your wife. The first question is were valid methods used.

If you want to, I will be glad to see if we can get a biologist here.

Do we have one who has handled this aspect of the program?

MR. POSTON: If you wish, we could call Dr. Harold Berkson.

CHAIRMAN STEIN: Are you the appropriate man, Dr. Berkson?

DR. BERKSON: I am afraid so. (Laughter)

CHAIRMAN STEIN: Come on up.

Here, don't leave, Mr. Yentsch. Why don't you stand up there with him and get this settled?

Let's proceed on the assumption that we haven't come to the conclusion yet that up-to-date methods weren't used just because we say so.

Dr. Berkson.

DR. BERKSON: Don't write down everything I say too fast because I am not too sure what I am going to say until right now.

My name is Harold Berkson and my current capacity is Executive Secretary of the National Technical Advisory Committee on water quality requirements for fish and other aquatic life and wildlife. This is the committee that Mr. Benson described in such glowing terms yesterday. My connection here is that I was the biologist involved with the controversial work.

The question is why was the old-fashioned light and dark oxygen bottle method used. I am trying to recall the logic that we went through three or four years ago when these decisions were made. As I recall, it was a composite of logistics in that time and budgetary restraint did not permit a tooling up for radioactive techniques. There also was at that time some question of the disposal situation for us because of our position in pollution control. This was a consideration.

But I think the primary one was the feeling that as long as the same technique was used in all stations, primitive or not, it was assumed that the errors intrinsic to the method would be the same throughout the procedures and as such would equalize. We were here not after a study of the environment, per se, but we were concerned with a study determination whether or not differences existed in the various areas studied. I think in this respect the methodology is satisfactory.

MR. YENTSCH: Well, I disagree, but it is academic.

CHAIRMAN STEIN: Right. All right. (Laughter)

That is what we suspected. (Laughter)

Will you go on, sir?

MR. HARRIS: The next expert to be called by Mr. Benson will be Dr. Ernest Salo.

STATEMENT OF ERNEST O. SALO
FISHERIES RESEARCH INSTITUTE
UNIVERSITY OF WASHINGTON

DR. SALO: My name is Ernest O. Salo. I am an Associate Professor of Fisheries at the University of Washington. I have been called on to make a statement by members of the Everett Technical Committee and this I am glad to do.

Associated with the University of Washington we have a group in the college of fisheries called the Fisheries Research Institute, which has traditionally done research in areas concerning fisheries for a number of years. Before my arrival at the university and since my stay there, the Fisheries Research Institute has been doing research for a number of agencies. But during the past several years the Fisheries Research Institute of the University of Washington, under the auspices of various grants and contracts, has been conducting research in Bellingham Bay, Everett Bay, Elliott Bay, and in the watersheds of these estuaries. The river systems involved are the Nooksack, the Snohomish and the Green.

The research has been sponsored under separate contracts by the Georgia-Pacific Corporation of Bellingham, the Everett Technical Committee, which is composed of representatives of the Scott Paper Company, Simpson-Lee Paper Company, and the Weyerhaeuser Company of Everett, and the research has also been sponsored by the State of Washington Water Research Center and the U. S. Public Health Service. Cooperating agencies are METRO, the Washington Department of Fisheries, the U. S. Geological Survey, and the Washington Department of Game on various projects.

I am going to digress for just a moment, but I think it is pertinent. The most intensive and perhaps the most sophisticated studies that we have conducted have been those associated with Elliott Bay, the Duwamish Estuary and the Green River. The specific objectives of this project are:

1. To develop a mathematical model to simulate the more important physical and chemical parameters of the Duwamish Estuary, including the rates of addition and dilution of pollutants.

2. To simulate and determine the movements and mortality rates of young and adult chinook salmon in

the estuary.

3. To determine the density and distribution of pelagic and demersal fishes in the estuary and near-shore marine environments affected by industrial waste discharge.

4. To record some of the parameters of the water quality in the estuary and compare them to the known environmental requirements of salmon and other fishes of economic importance.

On some of these objectives I feel we have succeeded and in some of these objectives I know we have a ways to go.

Data provided by four telemetry stations maintained and operated by METRO and the U. S. Geological Survey are being processed by the Fisheries Research Institute for use in mathematical models. Water temperature, DO, pH, conductivity, and incident solar radiation are measured hourly by these stations and recorded on paper tape. Computer techniques are used to screen out the data and estimate missing observations.

These data are then analyzed by time series techniques to describe mathematically tidal, diel, and seasonal cycles of water quality, the influence of factors of concern on water quality, and the time lag between the cycles of any two parameters.

Associated with this water quality work we have been working on the mortalities of young salmon in two sections of the Green River, the first extending from the Green River Hatchery to the Renton site and the second from the Renton site to Harbor Island. Because of the--now, this is important--because of the difficulty of direct observation, the only practicable means of estimating these mortalities is from recapture in the bay of marked fish released at each of three locations. The locations are the Soos Creek Hatchery, the Renton site and the Harbor Island site.

I will forego and spare you the details of the experiment, the problems of sampling with a tow net, the non-random distribution of fish and the description of the migration paths of the fish. The results of this year's and last year's work are being published as student theses. But I would like to say that we do have the computer programs for the continuous analyses of the telemetered data well under way, and estimates of the mortality rate of young salmon and their migration paths are available. Meanwhile, in order to impress upon you the magnitude of the project, the following summary on the numbers of fish marked and recaptured is included:

In 1966 in Elliott Bay we released 441,646 marked fish. We sampled 21 days with an actual 75 hours of net time, and we recovered 31,000 salmon, of which 2,894 were marked. Now, these were marked with a fluorescent pigment that is visible only under ultraviolet light. The technique was invented somewhere else, but we developed it at FRI.

Even with this amount of effort we found our mortality estimates biased and possibly misleading, so the experiment was repeated in the spring of 1967. The field work has just been concluded.

This year we marked and released 531,398 fish, a half a million, we tow netted for 32 days with a total of 140 hours of sampling time, and we recovered 5,200 marked fish.

Our mortality estimates, I believe, this year are valid. This year we modified the experiment a little bit by releasing at different water times under different flow conditions. We received the cooperation of people at Howard Hanson Dam.

The locations of the capture of these fish are recorded, as are the associated water quality parameters. Sampling occurred from May through the first part of July, when the fish no longer are available to the surface tow net. At that time the young chinook are large enough to dive and they become unavailable to our sampling gear.

A considerably more modest experiment was conducted this year on the Nooksack River and Bellingham Bay area where 102,000 chinook and 169,000 coho were marked and released at the Kendall Creek Hatchery and tow netting was conducted in Bellingham Bay for parts of 17 days. These 17 days were from May 15 through June 20, in that interim. We ceased on June 20 because we just ran out of money, charter money.

During that time, marked fish were captured during the entire period. 1,500 fish were captured, of which 140 were marked. All but 420 of the 1,500 were chinook. This is by the board, but incidentally, according to our calculations, all of the chinook in Bellingham Bay are of hatchery origin. We marked 10 percent of the fish released at the hatchery and 10 percent of the fish we caught were marked. The confluence limits on our estimates haven't been determined as yet.

Coho, the silvers, do not seem to be as available as chinook in tow netting, although we captured coho or silver in all areas of Everett Bay, Elliott Bay, and Bellingham Bay. The total sampling hours in Bellingham

Bay, the total hours of the net in the water, have not been computed, but the information is available.

The areas of recapture are shown in Figure 1 (indicating picture).

I will try to speak loudly so I don't have to go back to the podium.

The red marks are the chinook recoveries--

CHAIRMAN STEIN: Pardon me, sir, this is for the purpose of the record. Do you intend to submit that into the record?

MR. SALO: Yes, you may have it if you wish.

CHAIRMAN STEIN: Well, here are our limitations. We have to get that down. I am not sure we would have an insert. In any event, it will appear in black and white, and when you talk for the record, while you may have colors there like red marks, it might be advisable again, for your statement to have clarity for people who read the record, if you could use some other kind of descriptive terminology in discussing that so when people see your chart or map in the record they can follow.

MR. SALO: All right, fine.

The red marks here (indicating), which hereafter will be shown as squares, are chinooks, and they were present during the entire period along the entire waterfront

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of Bellingham Bay, that is from the date that they first arrived into Bellingham Bay, which was May 15. We captured chinook throughout the entire area along the waterfront, although transects were made throughout the bay.

The fish apparently were thriving, apparently in good condition, and stomach contents and other analyses are under way.

Research in Everett Bay has been covered in the project report, the report that you have and have submitted, and in separates by Richard Tyler, although the final report of Mr. Tyler's work for 1963 and 1964 has not been officially published because recent somewhat rigorous statistical treatment indicates a non-random or non-uniform distribution of the young chum and pink salmon in Everett Bay.

I think you will notice that Tyler's work has been covered rather well in the project report, and I certainly do not have any corrections to make except that for 1963 and 1964 I do not believe that the distribution was as uniform as is indicated in the report. I think that I have the statistical tests here, if anyone is interested in analyzing them.

I think these tests show that there is a preferential schooling area or a demonstrated avoidance

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of the higher sulfite waste liquor concentrations. The concentrations in Everett under the tests, however, were not as high as those in areas in Bellingham Bay, which apparently support salmon. Tyler's work also indicated that the fish may migrate through Everett Bay much faster than they do through either Elliott Bay or Bellingham Bay.

The fish were constantly of one size, indicating a new crop, either that or absolutely no growth, but the only way to check this, of course, is once again with marked individuals.

In 1966 we did conduct a mark and recapture experiment in the Snohomish River-Everett Bay system when 157,887 marked chinook from the May Creek Hatchery were released in two areas of Everett Bay. Six days of sampling showed recoveries along the waterfront in Everett Bay during the first day or two only. After that time we were unable to find chinook anywhere. Less than 100 chinook were caught in the bay and of these less than 20 were marked. I don't have the marked or unmarked ratios of these releases at the hatchery, but I feel we have enough information that we were sampling the group that we had released and we followed it out through the bay.

Ten days later an additional 50 or 60 of these marks--the reason I don't know whether it is 50 or 60, we had one color duplicated in Elliott Bay and duplicated with a color we released in Everett Bay, but we also had separate colors--but an additional 50 or 60 of these marks were recovered 10 days later in Elliott Bay. They showed a definite tendency to move out of Everett Bay very rapidly and go into Elliott Bay.

Incidentally, some of the fish that we released in Bellingham Bay were found in Elliott Bay. There is a complicating factor there. That is, that the fish marked at the Kendall Creek Hatchery, the May Creek Hatchery and Green River Hatchery were all Green River stock, either originally or directly. Our work on adult chinook have shown much the same thing. Like a ball of string unwinding, when the fish come back they tend to school in Elliott Bay, then head off to the various tributaries. I personally believe a large portion of the chinook found on the east side of Puget Sound is of Green River stock originally, and how long they maintain these habits I don't know.

But I just wanted to emphasize that in Elliott Bay the fish linger for a long time, apparently thrive, in Everett Bay they migrate through to Elliott Bay, at least the chinook, and in Bellingham Bay they have a tendency to remain for a much longer period of time, as nearly as we can tell at this time apparently do rather well.

At the present time the Fisheries Research Institute is completing its work in Bellingham Bay and in Everett Bay and perhaps we are in our last year of work in Elliott Bay, and I do want to thank the people involved. I found the people of Georgia-Pacific, Simpson-Lee, Scott Paper Company and other agencies extremely cooperative in every respect.

Today I do wish to emphasize the need for adequate monitoring of the marine environment at all times and would like to develop the practicability of robot monitoring and the use of computer programs for describing water parameters and predicting changes. This monitoring must be accompanied by meaningful bioassay stations, and equally as important is the study of marked or identifiable fish in an unconfined environment, that is outside of the live box. Conclusions of mortality rates of fin fish from confined bioassay stations can be misleading for the behavior and the possible avoidance by the fish must be considered. Then perhaps we can avoid the type of reasoning that evidently is necessary as found on Page 91 of the project report.

CHAIRMAN STEIN: Thank you, Dr. Salo.

Are there any comments or questions?

MR. HARRIS: I would like to ask Dr. Salo if you would give us a--give me, at least, a better idea of the correlation between your migration studies in Elliott Bay as they relate to Bellingham or the other areas of investigation?

DR. SALO: The only evidence we have is those fish that we have marked. Otherwise we had no idea what we were looking at except the tow netting in Everett Bay also indicated that--the infrequencies of the fish indicated that there was a new group going through all the time. The migration patterns, the fish moved downstream into the estuary the same time of the year, in May, remained in the estuary in Elliott Bay and in Bellingham Bay at least through June, moved out into deeper water and became unavailable to our gear.

The migration pattern in Everett Bay appears to be different. They appear to move out very rapidly, they are available for a day or two only, and then move out into deeper waters and other parts of the sound into Elliott Bay. We recovered more Everett Bay marks in Elliott Bay than we did in Everett Bay.

MR. HARRIS: Thank you.

DR. SALO: Now, as for determining mortality rates, the only way it can be done is to mark a group at the hatchery and release them, mark a group and release them directly above the bay, mark and release a group in the bay similar to our studies in Elliott Bay, then sample them, continue the progress of these fish until adulthood so norms can be established for each of these watersheds. And I believe that can be done without any great difficulty.

CHAIRMAN STEIN: Dr. Salo, without regard to the conclusions that you have reached here or the views expressed, I would like to say that I think a presentation such as you just made is, in my opinion, the possibly most meaningful for Conferees and people to work on, and since so many are here I would like to call attention to this. This does not deal with the content.

While the points Dr. Salo makes are very clear, certainly he has avoided two problems. I know what the temptations are when you get a captive audience like this. One is taking the opportunity of giving,with an audience that has to sit here and be exposed to it, a lecture on the field he is in. The second thing is going into tremendous detail about the technique and procedure of the experiment, which is largely of interest to another experimenter or comes up perhaps if you want to do cross examination. Now, these are the things, I think, that he has avoided doing.

I just point this out by way of observation, because I listen to scientific testimony very, very frequently. In my opinion, if the example we have had from Dr. Salo is followed, many of the scientific people will find that they are making their points more clearly even to the scientific community in other specific disciplines than their own.

One question, and this deals with a sentence that appears in the last paragraph on Page 4. You talked about non-random or non-uniform distribution, and your sentence in here reads:

"This shows either (1) preferential schooling areas or (2) a demonstrated avoidance of the higher sulfite waste liquor concentrations or (3) mortality in the areas of higher sulfite waste liquor."

You didn't read that third one when you presented your report. Is there any significance to that or do you stand on the way it reads in the statement?

DR. SALO: Must have been an oversight.

CHAIRMAN STEIN: Okay, thank you.

DR. SALO: I just want to thank you for your comments, although I came prepared to pick a fight, really.

I have some dead fish in my pocket that I picked up this morning, they are dead salmon and they were floating. I just wanted, if the occasion arose, to mention that not all dead salmon sink. However, these were in fresh water, so I really don't know.

I don't know why it is when I conduct an experiment all the fish die and they all float, and I can never get rid of the evidence. (Laughter)

CHAIRMAN STEIN: That is what happens to me when I catch too many. (Laughter)

Mr. Harris.

MR. HARRIS: The concluding expert on Mr. Benson's panel is Dr. Max Katz.

DR. MAX KATZ

RESEARCH ASSOCIATE PROFESSOR

COLLEGE OF FISHERIES

UNIVERSITY OF WASHINGTON

DR. KATZ: Mr. Chairman, ladies and gentlemen.

I am Dr. Max Katz, Research Associate Professor of the College of Fisheries, University of Washington.

In one of Mr. Stein's discourses he brought up a point that I am going to use as a sort of a theme. Mr. Stein pointed out that there was no conflict of interest between the duck growers and the oystermen. I am going to point out that there is no conflict of interest between the pulp mills and the fish people.

I think Dr. Tom English convincingly demonstrated yesterday there was no conflict of interest between the pulp mills and the English sole. Dr. Salo, I think, demonstrated that the chances of conflict between the salmon fisheries and the pulp mills was very slight. I am going to produce some more evidence along that line.

And in justice to the people here, you may pick up an implication that I believe that this Federal report is having the effect of creating a conflict of interest between the fish people and the pulping people when the evidence does not indicate such.

I was asked by Mr. Don Benson of the Northwest Pulp and Paper Association to look over the publication of the Water Pollution Control Administration, and the Pollution Control Commission, under discussion and to make a statement if I chose to. I have read the portion of the report dealing with the salmon and trout in Port Gardner, Port Susan and Bellingham Bay, and I would like to make some comments regarding this section of the report.

I remember the first time I heard about this investigation in any detail. At a seminar on our campus, a high official of the Public Health Service outlined the program and stated that they would have the complete picture in about three years. Sitting next to me was one of the most respected professors on the campus. He bent over and said, "They must have a terrific organization, Max. With a problem as complicated as the pulping pollution problem, it would take most people about three years to get to the place where they could decide on the problems that needed investigation."

As I read over the sections of the report that I mentioned, I found that the professor was right. Some interesting work was done, enough of a background was laid so that now some careful studies can be made to get some idea of the effects of the pulping wastes on fish in these harbors.

Two conclusions were made in this report. One, the study confirmed that the young salmon passed through these harbors on the way to the ocean. This, of course, might be regarded as obvious, but confirmation was necessary. Two, young salmon confined to live boxes which are subjected to high concentrations of pulping wastes would be killed.

From these two observations the researchers decided, stated and publicized that pulping wastes seriously affected the salmon and trout populations in these areas and were responsible for the declines of the salmon and steelhead in the Snohomish, Stillaguamish and Nooksack systems.

Now, outside of some technical reservations in regard to the observations listed above, I go along with the observation that young salmon and steelhead go through Port Gardner, Port Susan and Bellingham Bay, and I also believe that young salmon cooped in live boxes close to the mill effluents will not live, and I also acknowledge the possibility that salmon might be harmed because of these waste effluents, but I fail to see that any proof was offered that our salmon and steelhead populations were harmed.

As they say, the proof of the pudding is in the eating. In the fish business, the proof of the success or failure of a fisheries management program is in the return or lack of return of harvestable fish to the net, to the fisherman, or to the hatchery. You can release 10 million salmon fry from a hatchery. You can tell if your release is successful if the fish are taken ultimately in the commercial or sports fishery or come back to the hatchery. You evaluate your steelhead program by the returns as indicated by your steelhead punchcards. If the fish don't come back, something went wrong somewhere, and it is our business as biologists to find out why and competent biologists can do it.

A very glaring omission in the section of the report that I read was the neglect to give any information on the status of the steelhead and salmon runs to the Nooksack, to the Snohomish, or to the Stillaguamish. Some very interesting information could be derived by the comparing of the returns back to these rivers with the returns to an unpolluted stream in the same general area.

It so happens that both the Washington State Department of Fisheries and the Washington State Department of Game spend a good deal of time and trouble to collect data on the returns of fish to the various fishing areas and to the various rivers. These agencies collect this data because it is one of the best ways to find out what is happening to the stocks of fish that are their responsibility. These reports are not secret. In fact, two of the Washington State Department of Fisheries statistical reports are cited in the bibliography of the pulp mill report. The Washington State Department of Game publishes their steelhead punchcard returns regularly in their bulletins and these are picked up by the sportswriters.

Yet this logical step in the development of this report was completely overlooked. Instead of giving us the statistical proof that the salmon and the steelhead of the Snohomish, Nooksack and Stillaguamish are harmed, we are asked to accept the conclusion derived from live box studies in the harbors. I think that you would be interested in looking at this public data.

I am going to put on some slides. I will make sure that you get copies of these slides. Incidentally, I have two large reports that I have prepared for the Northwest Pulp and Paper Association analyzing this material, which I will see that you get.

CHAIRMAN STEIN: Dr. Katz, how big are these reports?

DR. KATZ: Large reports.

CHAIRMAN STEIN: How many copies can you have made?

DR. KATZ: I think the mimeograph machines could produce thousands. (Laughter)

CHAIRMAN STEIN: No, how many could you give us?

DR. KATZ: As many as you want.

CHAIRMAN STEIN: All right. We will have those, without any objections--

DR. KATZ: Don Benson, of course, will be my agent.

CHAIRMAN STEIN: We will have those two reports, without objection, as an exhibit, and they will be available at the Washington State office, the Portland office and in Washington, D.C.

(The reports referred to are marked Exhibit 5 and are on file at the FWPCA Headquarters in Washington, D.C., with copies on file at the FWPCA Regional Office in Portland, Oregon, and the State of Washington WPCC office in Olympia, Washington.)

CHAIRMAN STEIN: Your slides--

DR. KATZ: We will have them duplicated--

CHAIRMAN STEIN: We need three copies. They will be exhibits too, and will follow your presentation.

(The slides referred to follow page 280.)

CHAIRMAN STEIN: It would be better if you do it, but if not we will have to apply a numbering system to the slides. Is that all right?

DR. KATZ: All right.

CHAIRMAN STEIN: O. K. We will give you the series number MK-1. Is that satisfactory?

DR. KATZ: Thank you.

CHAIRMAN STEIN: Right. Then we go on to 2, and so forth.

All right.

DR. KATZ: Let us first look at the steelhead catch in the Snohomish River system. In this report we are told that the steelhead trout are adversely affected, sometimes they say seriously injured, there are many colorful adjectives applied, by the pulping wastes in Port Gardner. Let us compare the catches of the Snohomish system with that of the unpolluted Skagit system, which is regarded as the most productive steelhead stream in the State. These data are from the Washington State Department of Game statistical reports.

I don't know that we need the lights off.

(Slide MK-1)

There it is. The solid line is the polluted Snohomish system--or is it?--yes--no--well, it is a little bit confused there (laughter)--and the dotted line is the Skagit system. These are Washington State Department of Game.

Now, we take a look at that data. One river is seriously polluted, the other river is not polluted, and there the curves climb up together and intertwine beautifully. This is evidence, of course, that the pulp mills are killing all the steelhead in the Snohomish River system.

It is hard to conclude from this chart that the Snohomish system steelhead are being harmed by pulping wastes. These curves can be correlated only with the number of steelhead migrants that the State Department of

Game puts into the rivers.

Incidentally, this program on the steelhead of the State Department of Game is one of the classics of fresh water fisheries management. It is being adopted by the State of California and others.

Steve, put the next one on, will you please.

(Slide MK-2)

The broken line is the catch of steelhead for the Snohomish, the solid line is the plants--the scales are hard to read, but you can see the plants in the recent years have been between 160,000 and 180,000 downstream migrant steelhead. As the plants increase so do the catches increase.

This is the Snohomish. Can you give me a Skagit?

(Slide MK-3)

Again here is the Skagit system. The Skagit is unpolluted. The Skagit is the best steelhead stream in the State of Washington. You can see the broken line and the plants are in a different scale, they have had some plants up as high as 670,000, but in recent years, according to this, it is about 200,000. They have set up the new program, the slough program, which has helped things along too. Another very, very successful program.

MAX KATZ

(Slide MK-4)

Bang on the other slide, Steve, and let it soak while I check my notes.

Now let us take a look at the steelhead picture in the Nooksack system. The catch is lower, but that can be readily explained because the Nooksack is not planted heavily, as the figure shows. There are two different scales, as you can see the plant is on a different scale. The catch is over on my side, and the catch varies between 1,000 and 2,000 fish. The plants are very irregular. The data were hard to find, but the plants in recent years have been 20,000 fish as compared to about the 180,000 in the Snohomish and the well over 200,000 in the Skagit. Obviously the returns are correlated with the plants.

And yet you will notice in the last few years--now, this is the polluted Nooksack; it is a very small river--the catch has been increasing since 1960. Again how can we say that pulping wastes are damaging the fish in the Nooksack River? The returns are correlated to the plants.

The logical reasons, of course, for these low plants in the Nooksack system--these are my reasons, not the Game Department's--(1) the downstream migrant steelhead program/is an expensive one and most of the fish are planted wisely in the rivers adjacent to the larger centers of population so that they will be more readily available to the angler. And another reason, the Nooksack has an intensive Indian fishery and I don't imagine that the State Department of Game is interested in supporting an Indian commercial fishery.

These data, which are the published data of the Department of Game, indicate conclusively that the steelhead populations of the Snohomish and Nooksack system are not affected in any demonstrable manner by the pulping wastes.

So obviously they are in error when they conclude that the steelhead or the anadromous populations are being damaged by pulping wastes. Statistics don't bear this out and biologically it doesn't make any sense either.

Now let us look at the published statistics of the Nooksack salmon fisheries and compare them with the catches of the entire Puget Sound--

(Slide MK-5)

--and the unpolluted Skagit River. Now, the Skagit River, as documented in your report, is one of the very largest rivers in the Puget Sound. This figure on top is the commercial catches of chinook in Puget Sound. You can see it is increasing. These are the commercial catches. On top of the commercial catches we can add a sports catch, which is as great in magnitude as the commercial catch.

You see the mighty Skagit, one of the largest and, of course, most unpolluted rivers, the catch has been steadily declining, so that it is in about the same size as the Nooksack, which is a very small river. The Nooksack is gradually climbing.

The Nooksack, of course, as Ernie Salo pointed out, is being supplied with fish from the Washington State Department of Fisheries Hatchery. The Washington State Department of Fisheries has had an excellent hatchery program, they have done some fine research, and they have made some breakthroughs in hatchery technology; it is a very bright spot in the picture.

As you can see, the chinook in Puget Sound are on the increase, or the trend seems to indicate so. Again these are published data from the Washington State Department of Fisheries. So these data do not permit us to say that pulping wastes in Bellingham Bay are affecting the chinook.

Let us take a look at the silver salmon catches.

(Slide MK-6)

MAX KATZ

Since the early 1950's the catch of silvers in Puget Sound has been below the average, yet the catches of silvers in the Nooksack is remarkably steady and the catches of the mighty Skagit are right in the same ball park. This is incredible. The large rivers in Washington State apparently, for some unknown reasons, are not major producers. It is a cinch the Skagit is not being polluted by pulp mills. So these data do not permit us to say that pulping wastes in Bellingham Bay are affecting the silvers.

Now for the chum salmon.

(Slide MK-7)

For reasons unknown, the chum salmon in Puget Sound has been declining rapidly, yet the production in the Nooksack, while never spectacular, is quite uniform. The mighty unpolluted Skagit produces about the same number as the Nooksack. Again these data do not allow us to say that the Nooksack is being seriously affected or affected at all by pulping wastes.

The pink salmon is the fourth important species of salmon in Puget Sound.

(Slide MK-8)

Its production fluctuates greatly. Pink salmon come in every other year or so. I didn't have the same kind of graph. The Nooksack, too, shows the same wild fluctuation which is typical of Puget Sound, yet by a rare coincidence the two years in which the catches in the Nooksack go off the chart, the Nooksack is the bottom, are in 1961 and 1963. In 1963, the year of the greatest production in the Nooksack, the Federal Water Pollution Control Administration was very busy working in Bellingham Bay. Perhaps it takes a large Federal investigation to bring the salmon in (laughter).

I cannot see any reason to contend that pulping wastes have been shown to have any effect on any of the catches of the Nooksack River fish.

So although there is a possibility that pulping wastes could affect salmonids in Bellingham Bay, the catch data clearly indicates that the salmon and steelhead in Bellingham Bay have the good sense to stay out of the polluted areas, and they do quite well. I might mention research by the Public Health Service in Corvallis, Oregon, showed that in the laboratory--and we have been discounting laboratory experiments, unfortunately--young salmonids can detect and avoid pulping wastes and low dissolved oxygen concentrations.

Now let us turn to the Snohomish situation and take a look at the fishery in Port Gardner and Port

Susan. This is a little more difficult to interpret--

(Slide MK-9)

--because some of the fish taken in these areas go up the Snohomish, some go up the Stillaguamish, and the fishery here is also rather difficult to interpret, at least as far as I am concerned, because most of the commercial fishermen seem to prefer to fish the Port Susan area.

Nevertheless, it can be seen that the chinook have been declining in Port Gardner. On the other hand, the catch in Port Susan has increased. The catch in Port Susan, of course, follows the trend of the Puget Sound.

Now is the time to ask the questions, and there are many questions to be asked and the answers are not simple. These are some of the questions to which we have to find answers before we know what is happening to the salmon in the Snohomish and the salmon populations in Puget Sound.

1. We have been told that pulping wastes can affect fish. Are they actually affecting salmon? To what extent and how can we measure it?

2. Is there overfishing?

3. Is there underfishing?

You might question underfishing. The

gentleman at Port Angeles yesterday was telling about that Dungeness pink problem. There is an example of underfishing and the action the State will take to remedy this.

4. Is the management policy correctly informed and do the management agencies have enough information to set up meaningful regulations?

5. What is the loss of the spawning areas? For example, what is the loss in salmon and steelhead spawning areas resulting from the water supply dam that the City of Seattle has built on the Tolt? The Tolt is one of the tributaries of the Snohomish.

And as a correlary to that, what is the effect of the copper sulfate that the City of Seattle is applying to these reservoirs on the downstream fish?

6. What is the extent of egg mortalities in the streams?

7. What is the effect of the mechanical disturbance of the streams resulting from construction, dredging, stream straightening?

8. Are the logging practices in the watersheds harming the fish?

Correlary to that, how are we going to evaluate the effects of the forest fires on the Beckler River, which is one of the tributaries of the Snohomish?

We know one thing. The water temperature certainly went up in this stream. We know what will happen in the winter when the rains come: We are going to have uncontrolled runoff.

9. What are the effects of the insecticides and herbicides being sprayed on the forests and farmlands?

The chlorinated hydrocarbon insecticides, which is my research specialty, have an effect on the reproduction of fish at two-hundredths of a part per billion, and then they discuss sulfite waste liquor 1,000, 2,000 parts per million as being a toxic compound. I only wish that most wastes were as little toxic as sulfite waste liquor. It would be much brighter for the fisheries and oyster people.

10. What is the effect of water diversions for municipal use? Hydroelectric power? Agricultural use?

11. What are the effects of mining activities and gravel operations?

12. How many young salmon have been affected by the low-water flow this summer? The streams are drying up.

I got a call from a woman who lived near the Nooksack and she was asking me, "Well, do you think the State agencies will get mad if we took some of these fish in these pools that are dying up on the Nooksack and put them in our ponds?"

And I said, "You had better ask them."

So the streams are drying up and this summer is a beautiful example.

(b) Increased water temperatures in the stream.

13. What effect do sub-freezing temperatures have in the colder winters?

The International Pacific Salmon Fishery Commission, up in New Westminister, found that the water temperature when the eggs were in the gravel is one of the critical factors in pink production.

14. What effects do the scouring floods have?

15. What effects do the many construction projects have?

16. What effect does the denudation of stream banks have?

17. What effect does stock watering have in the small tributaries?

18. What are the effects of industrial or domestic wastes in the fresh water areas?

19. What effect does the blockage of small streams by log jams resulting from logging operations have?

20. What effect does the alteration of

channels by the engineers to improve navigation have?

21. What effect has the building of revetments and dikes in the lower river had?

22. What is the effect of predation in fresh water by seagulls, eagles, trout, char, char-Dolly Varden, other salmon, and sculpin, as well as, of course, by people that are out fishing for trout, catch the young salmon, rip them off the hook and then throw them back in?

And, of course, there are many other factors I am sure that knowledgeable fisheries biologists can recognize as affecting the populations in the fresh water.

And then the last item is how do we evaluate the natural and fishing mortality in salt water?

When we get good, solid information on all of these questions, then we will be in a position to tell what has happened, what is happening, and what will happen to the salmon.

The problem is a complex one, the answer is not a simple one, and anyone who proposes the simple answer to the complex problem is deluding himself and is deluding the public. It is even more regrettable that a prestigious Federal agency has placed itself in this position.

If I may go on, the chinook catches in

Port Gardner are poor, yet the counts of returning chinook to the hatchery are increasing and in 1964 over 1,800 adult chinook returned to the Wallace Hatchery, which is a tributary of the Snohomish. In the 1950's the average was less than 100. So the picture may be brighter than the catch indicates.

Let us turn to the silvers.

(Slide MK-10)

As you can see, the catches in Port Susan, Port Gardner and Puget Sound bounce all over the map. You will observe, however, that the peaks and troughs coincide. This indicates that when conditions obtain that are favorable throughout the sound, then catches are good in Port Gardner and Port Susan, and when conditions are poor in Puget Sound or in the ocean, then they are poor in Port Gardner and Port Susan. There is a common ecological factor that obviously regulates silver salmon production in Port Gardner, Port Susan and Puget Sound.

One of these factors is known and that is rainfall. When we have a cool, wet summer, a typical 4th of July picnic summer when it rains, we get excellent silver production. When we get a warm, dry summer we get poor silver production. I can guarantee you that as a result of this summer's hot, dry weather, silver salmon production in the Puget Sound area will be poor all over. You could shut down every pulp mill, you could shut down every sewage treatment plant, you could shut down every industrial plant in the Puget Sound region, you could ship everybody out, and silver salmon production in 1969 will prove to be among the lowest recorded.

Now let's look at the chums, Steve.

(Slide MK-11)

You will observe the decline in Puget Sound. The catches of chums in Port Gardner and Port Susan have followed this decline. The cause is unknown, but as far as I have been able to gather it obtains throughout southern Puget Sound.

Now let us look finally at the pinks.

(Slide MK-12)

Port Gardner and Port Susan, along with the rest of the State, have wildly fluctuating catches and the fish in the vicinity of Everett do well when the rest of the State does well and poorly when the rest of the State does poorly.

That concludes my exhibits. The catch data prove that the Nooksack is a remarkably steady producer, and with the exception of the Port Gardner chinook, perhaps, the Snohomish fish follow tne over-all trends of the

State.

What has this bulky Federal report proved regarding the salmon? It merely indicated that pulping pollution may be a factor in the salmon picture, but it has not shown one iota of proof in the form of data that it is a factor, nor how important a factor it might be. The irony of it all is that we knew what the Federal Water Pollution Control Administration has suggested in regard to the salmon fisheries many, many years ago. The earliest report I have seen on this in Puget Sound, I believe, was in the late 1920's by a fellow named Nightingale, and this large expenditure of time and effort has not given us any further useful information.

Thank you.

CHAIRMAN STEIN: Thank you, Dr. Katz. Any comments or questions?

MR. HARRIS: I have no comment.

MR. POSTON: No, sir.

CHAIRMAN STEIN: Max, you know, we worked for the same prestigious organization together about 15 years ago. You were livelier than any fish in your tank, and I see the years haven't slowed you up a bit.

DR. KATZ: Thank you. (Laughter)

CHAIRMAN STEIN: And at the risk of having you ask your 21 questions or 20 questions about my methodology, I would like to throw out the tentative conclusion, if you are going to educate your children, educate them to be biologists and not lawyers. (Laughter)

DR. KATZ: I was suggesting law to them.

There is a question there, I think, by Banner.

CHAIRMAN STEIN: No, I told you, I am sorry, we just can't entertain questions from the floor. If you want to proceed, you can take the floor, and I hope Dr. Katz or someone will be available to answer your questions at the time. If we throw this open to questions from the floor, we can expect to be here for the next month.

At this point, we will take a ten-minute recess.

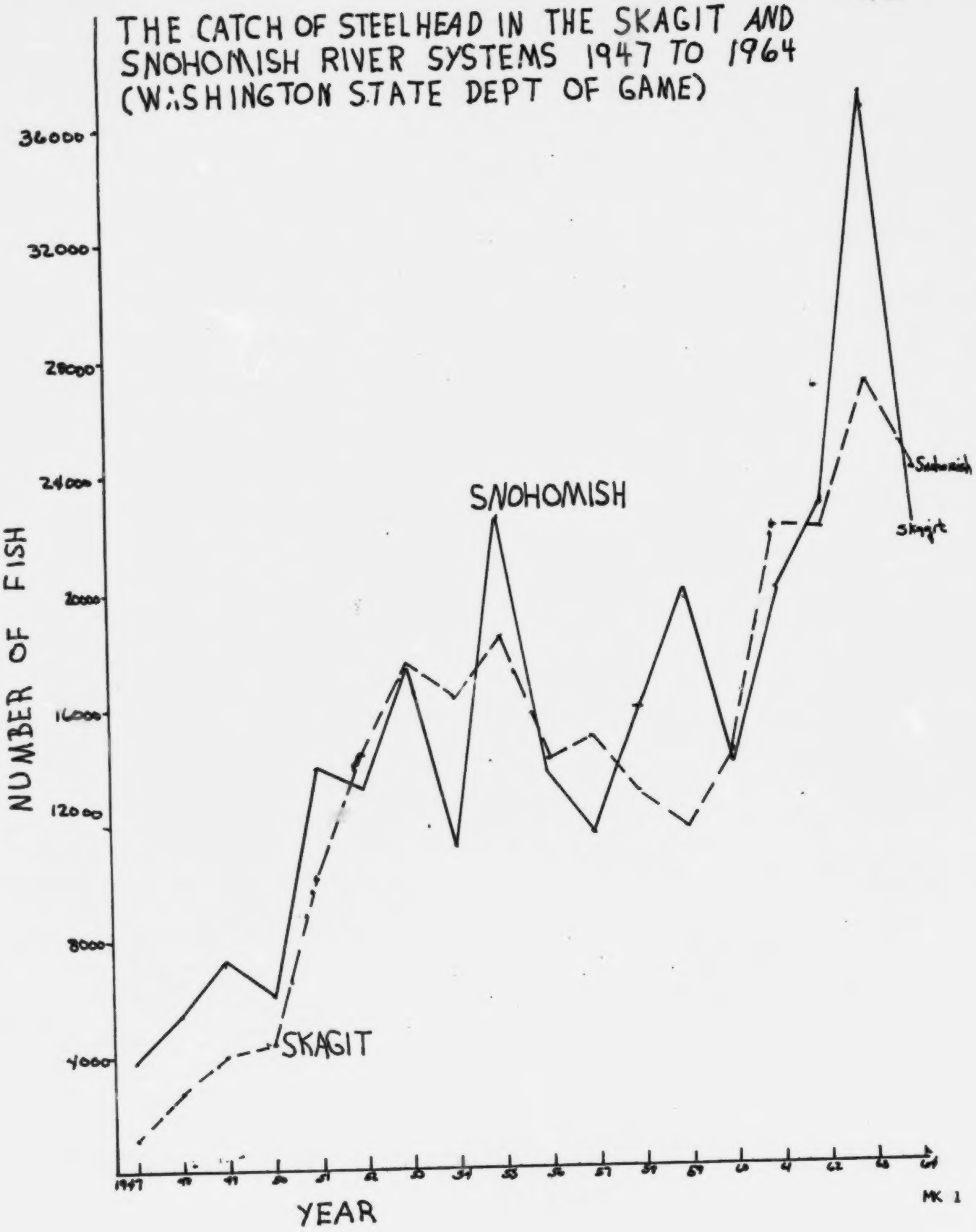
(RECESS)

CHAIRMAN STEIN: We will continue with the Washington presentation, Mr. Harris.

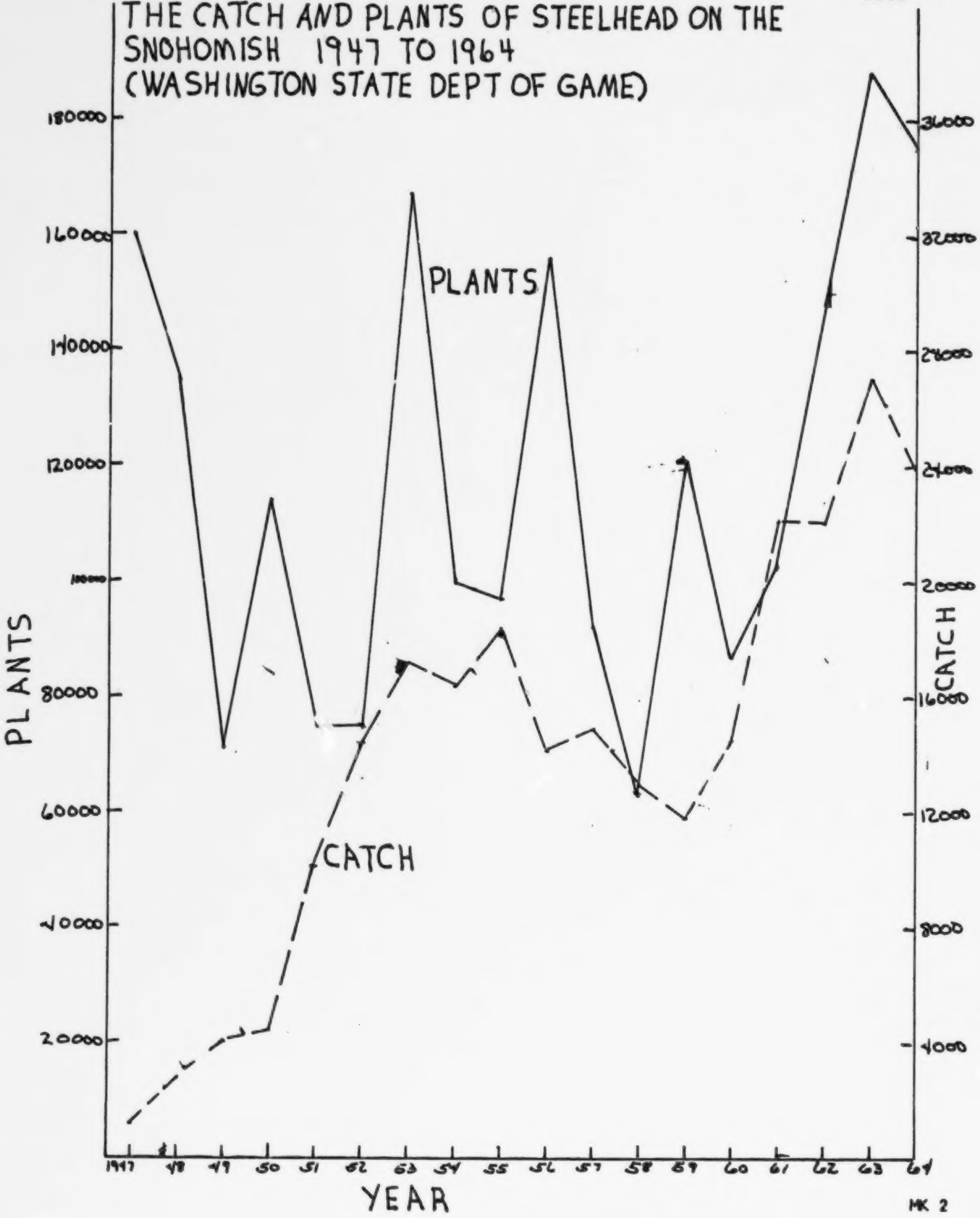
MR. HARRIS: We are going to deviate from the presentation of the pulp and paper industry and hear some statements from the oyster industry at this time.

SHELLFISH INDUSTRY PRESENTATION

MR. HARRIS: First I should like to call upon Mr. Edward J. Gruble.

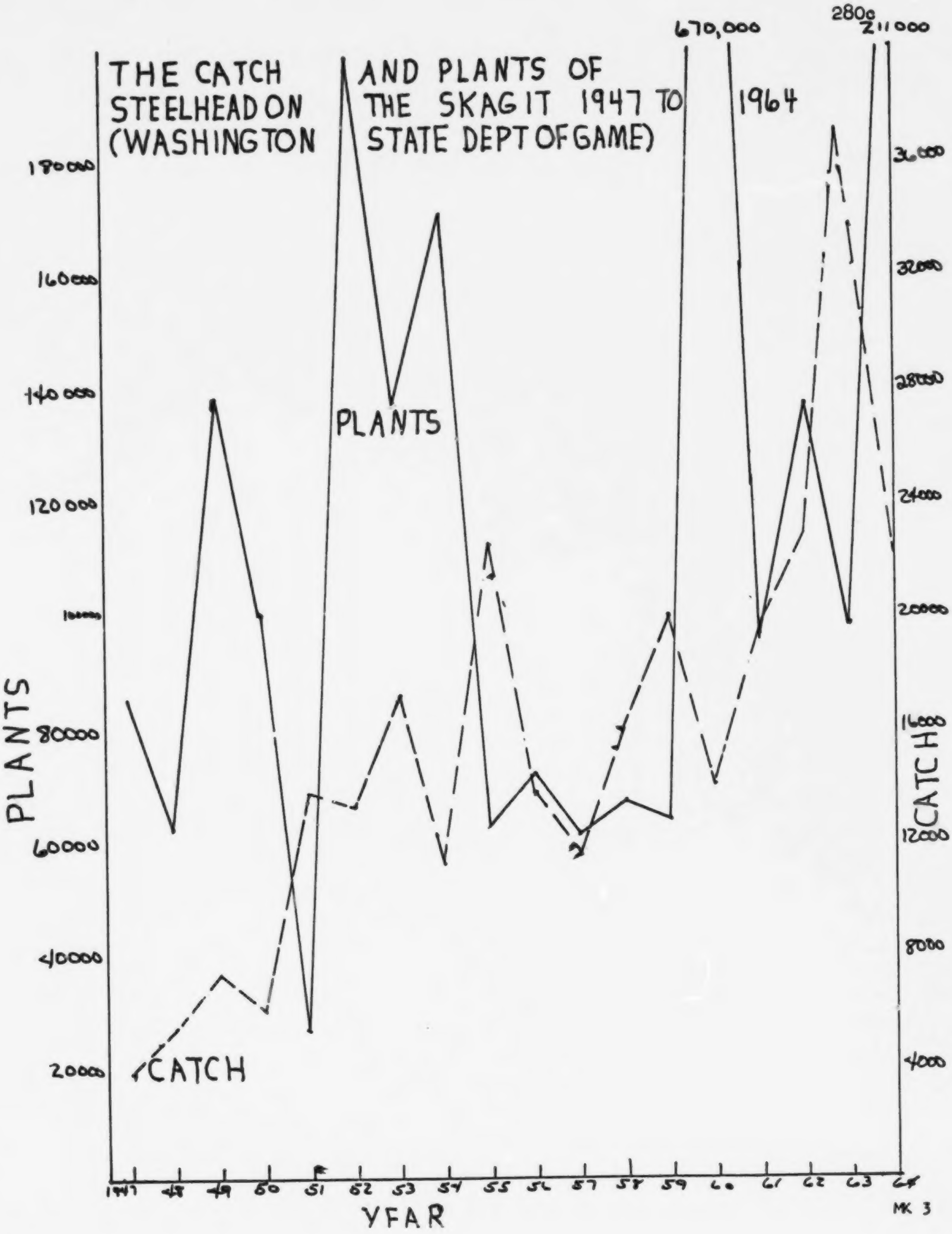


THE CATCH OF STEELHEAD IN THE SKAGIT AND SNOHOMISH RIVER SYSTEMS 1947 TO 1964 (WASHINGTON STATE DEPT OF GAME)



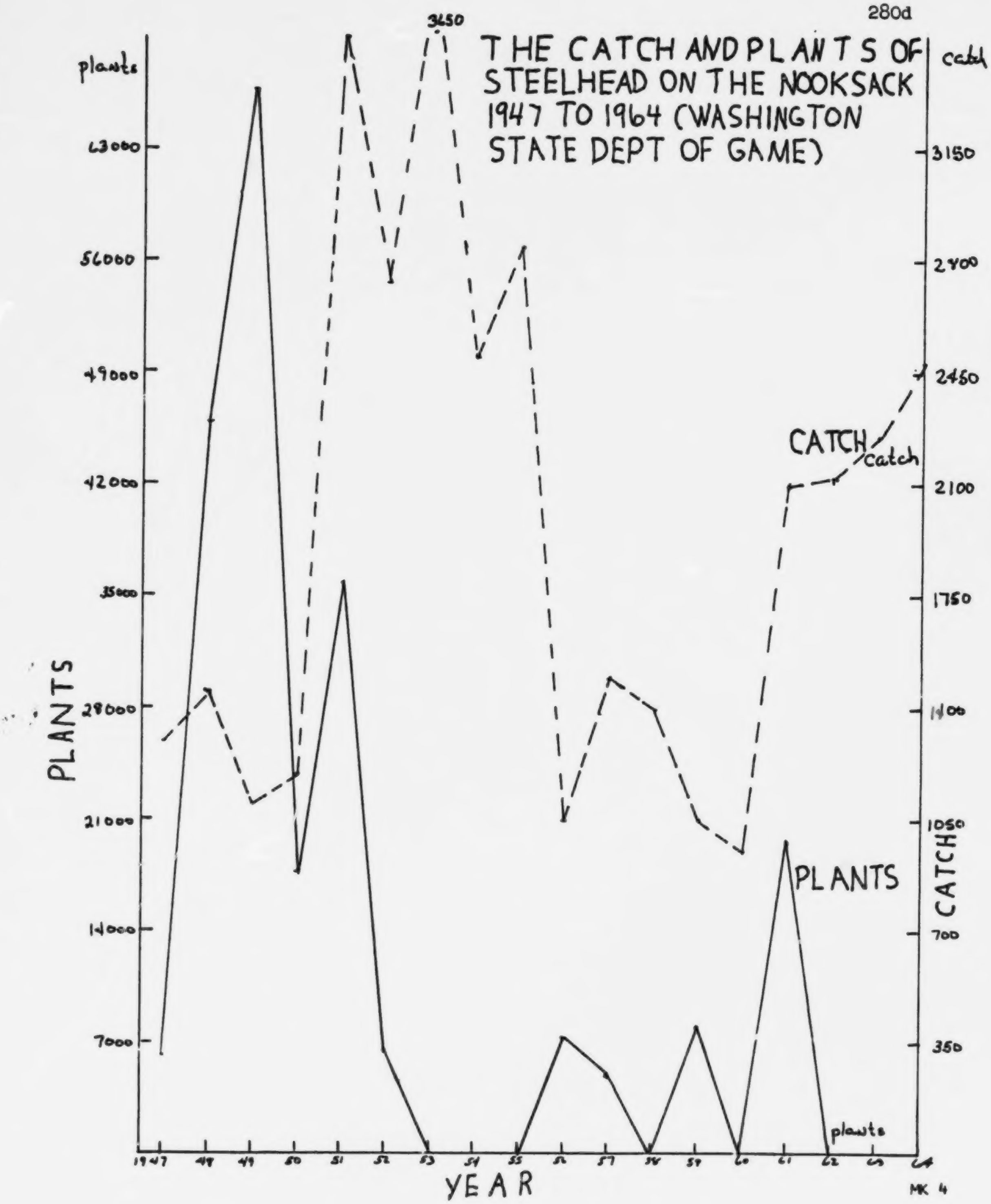
THE CATCH AND PLANTS OF STEELHEAD ON THE SNOHOMISH 1947 TO 1964 (WASHINGTON STATE DEPT OF GAME)

MK 2

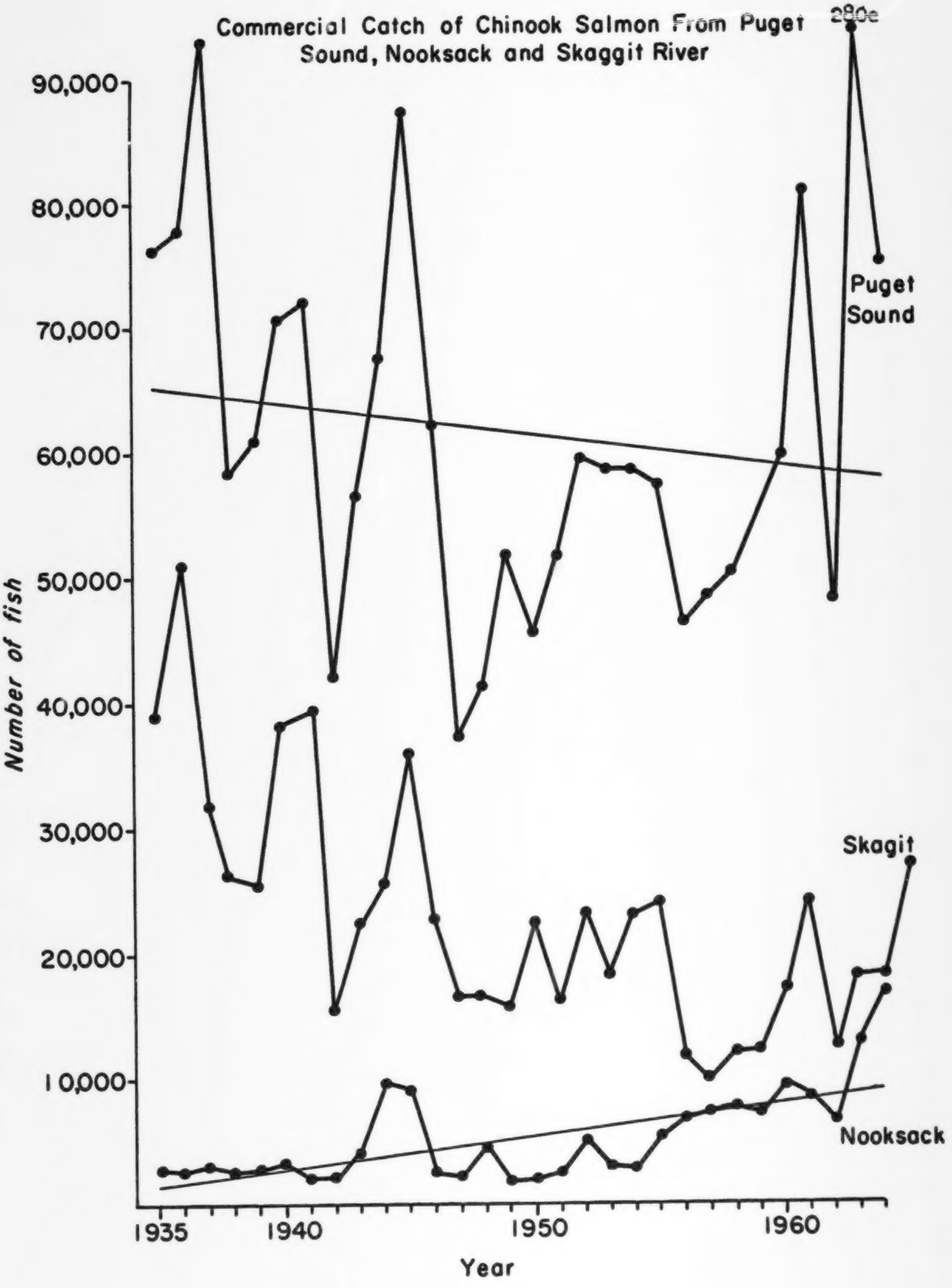


THE CATCH AND PLANTS OF
STEELHEAD ON THE SKAGIT 1947 TO 1964
(WASHINGTON STATE DEPT OF GAME)

MK 3



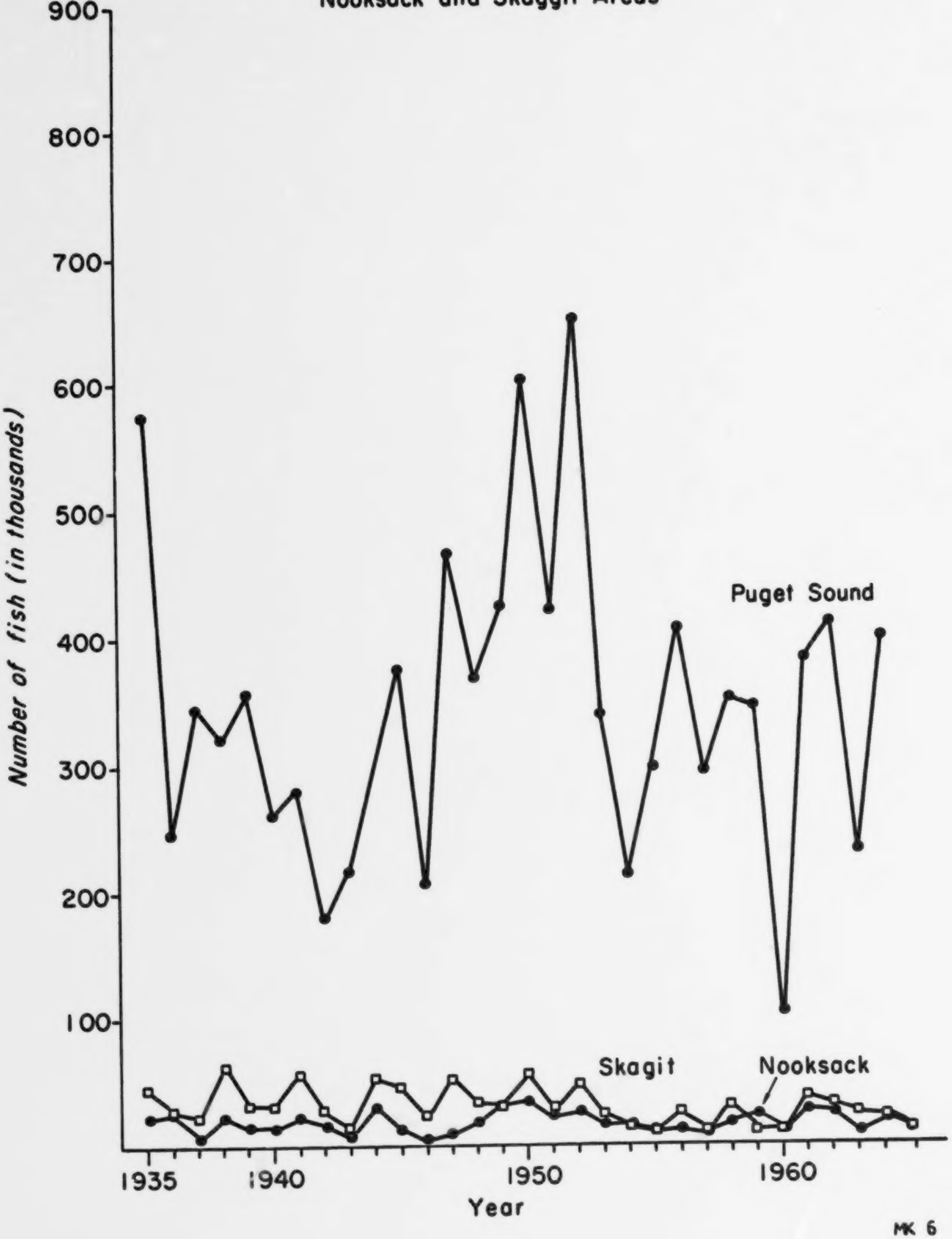
THE CATCH AND PLANTS OF STEELHEAD ON THE NOOKSACK 1947 TO 1964 (WASHINGTON STATE DEPT OF GAME)



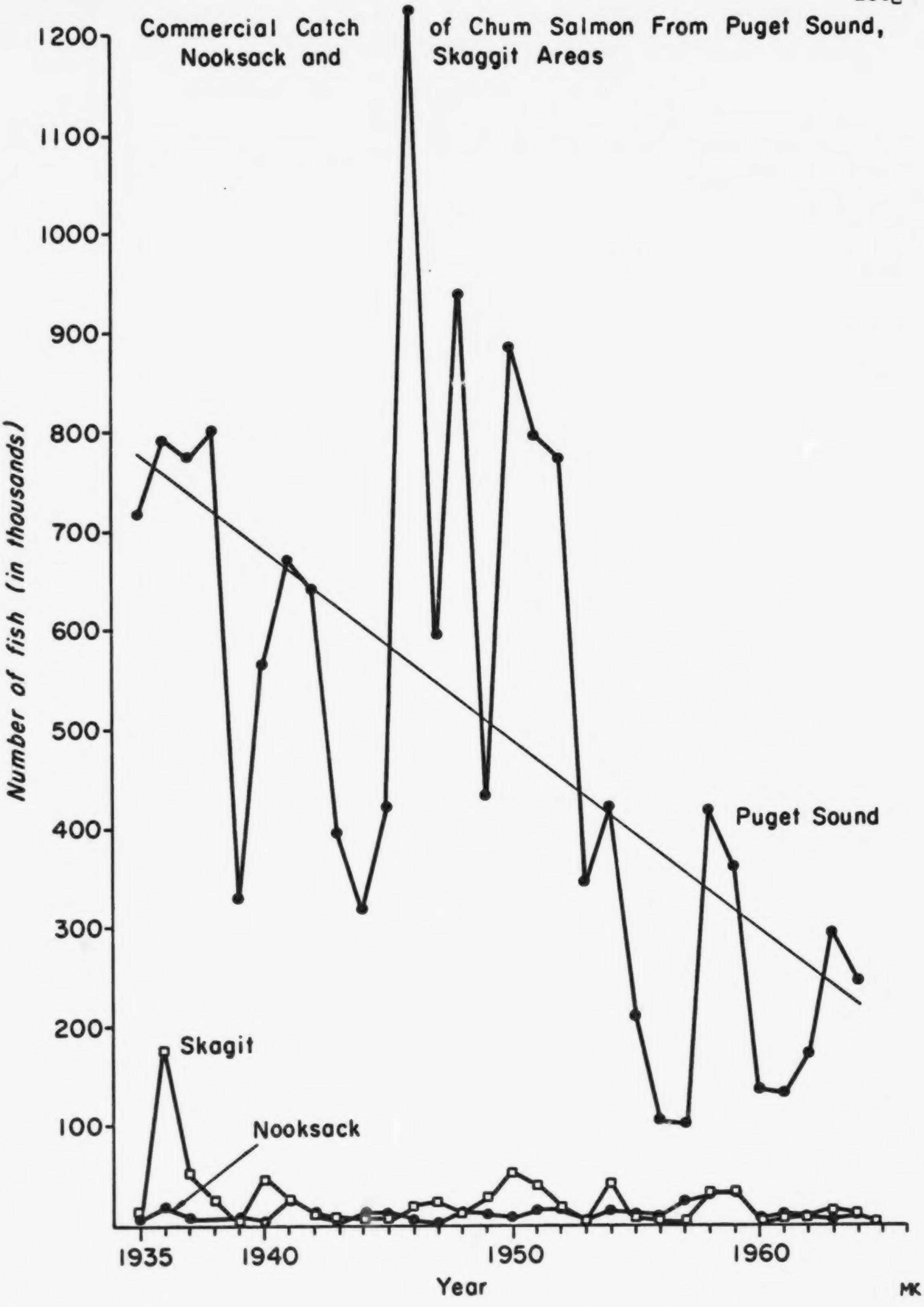
Commercial Catch of Chinook Salmon From Puget Sound, Nooksack and Skaggit River

MK 5

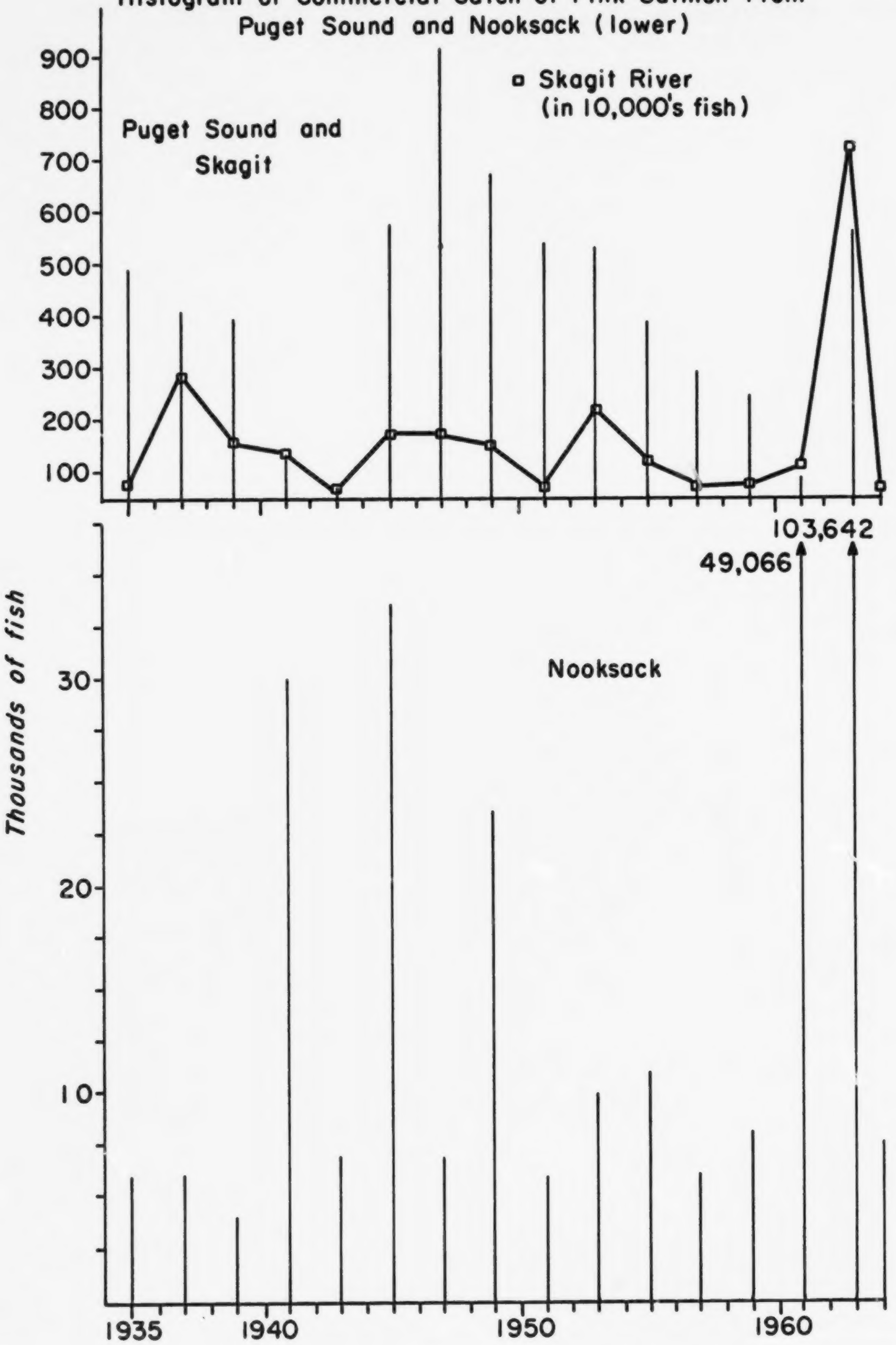
Commercial Catch of Silver Salmon From Puget Sound, Nooksack and Skaggit Areas



MK 6


Commercial Catch of Chum Salmon From Puget Sound,
Nooksack and Skaggit Areas
Number of fish (in thousands)
1200
1100
1000
900
800
700
600
500
400
300
200
100
Puget Sound
Skagit
Nooksack
1935
1940
1950
1960
Year

MK 7



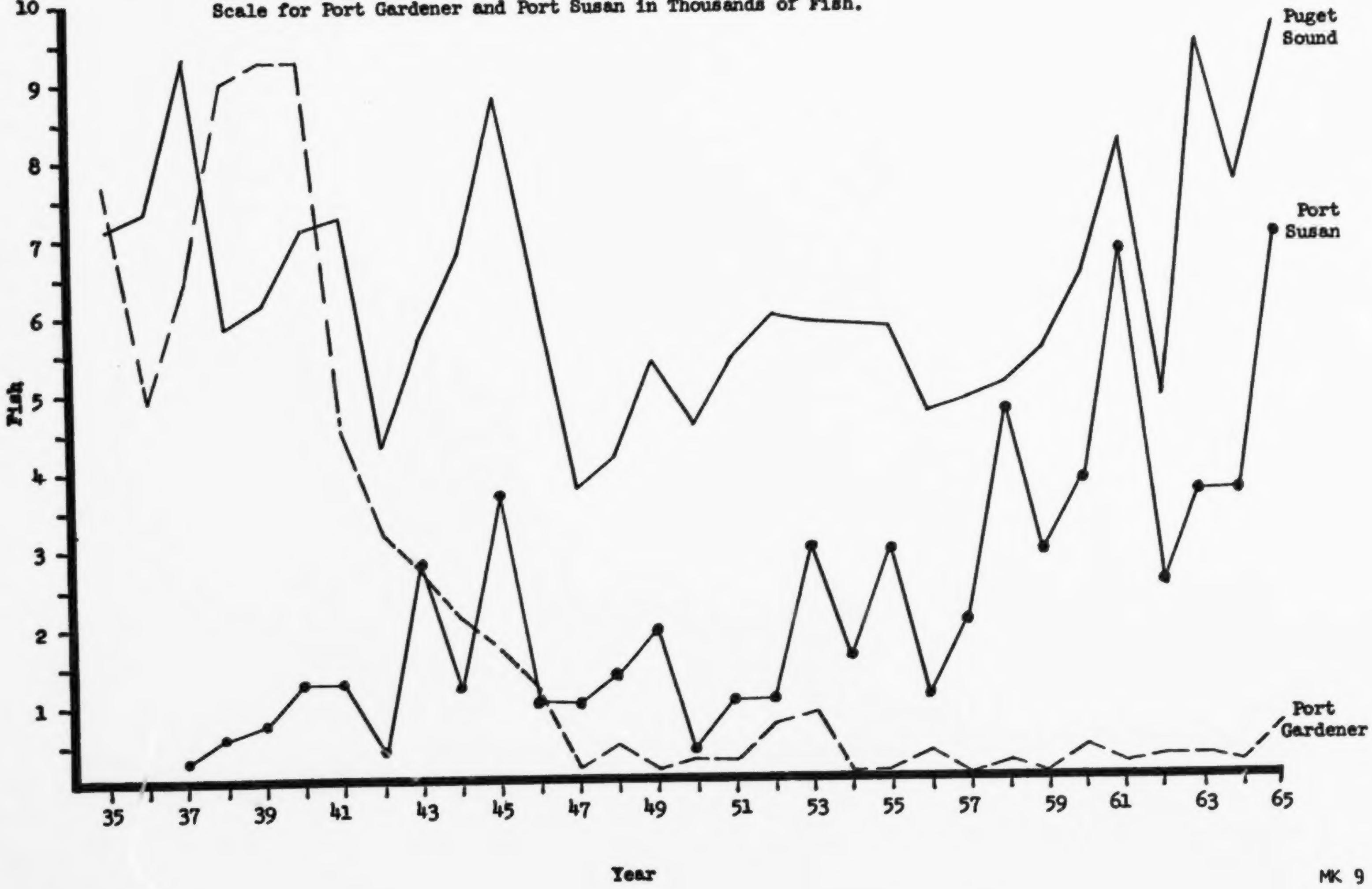
Histogram of Commercial Catch of Pink Salmon From Puget Sound and Nooksack (lower)

MK 8

2801

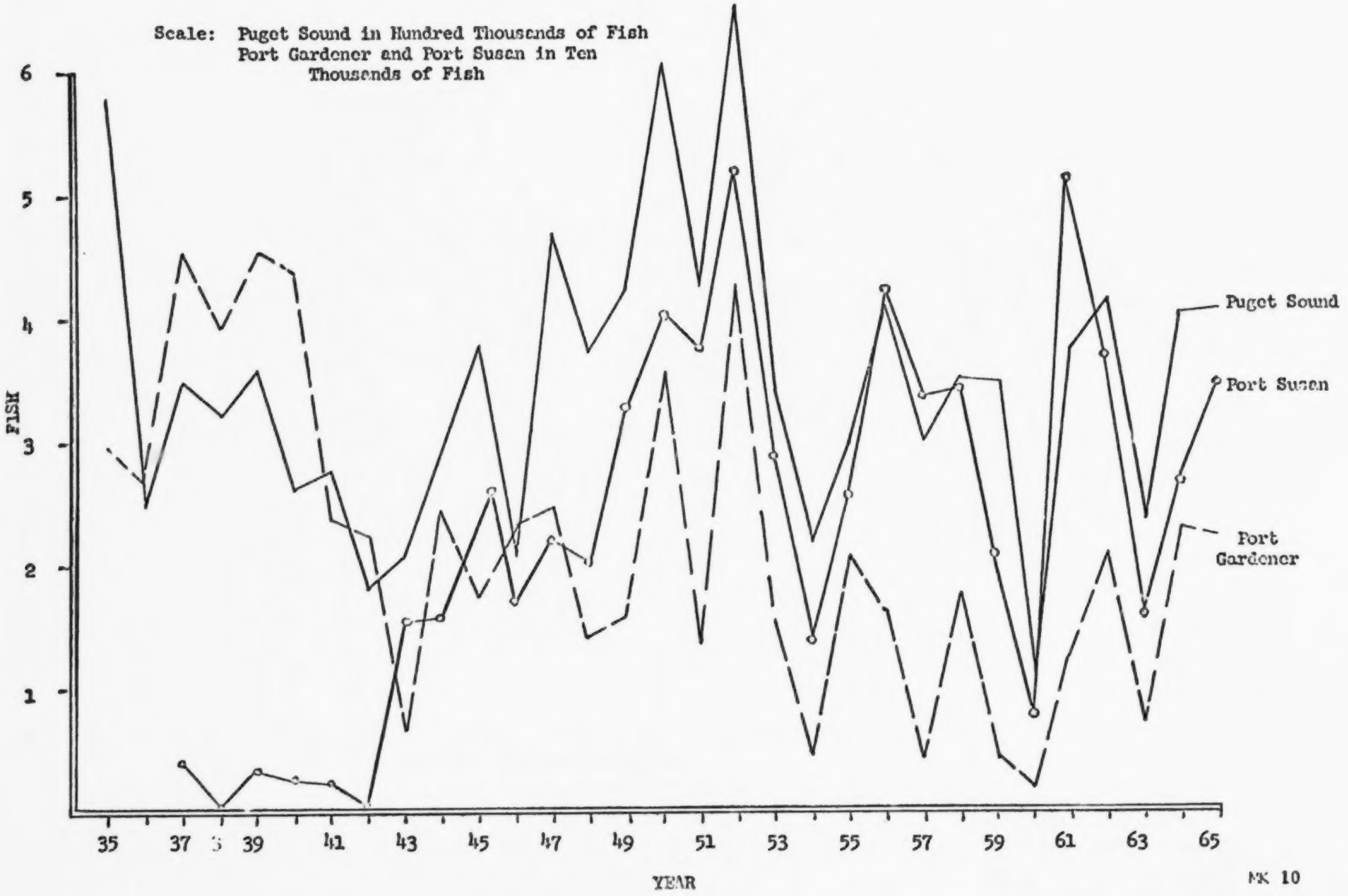
Total Commercial Chinook Salmon Landings (Gill Net, Drag Seine, Traps) in Port Susan and Port Gardener Areas Compared to Puget Sound, 1935 - 1965, in Numbers of Fish. Data is from Washington State Department of Fisheries Annual Report.

Scale for Puget Sound in Ten Thousands of Fish.
Scale for Port Gardener and Port Susan in Thousands of Fish.



MK 9

Total Commercial Silver Salmon Landings (Gill Nets, Drag Seines, Traps) in Port Susan and Port Gardener as Compared to Puget Sound, 1935 - 1965, in Numbers of Fish. Data is from Washington State Department of Fisheries Annual Reports.

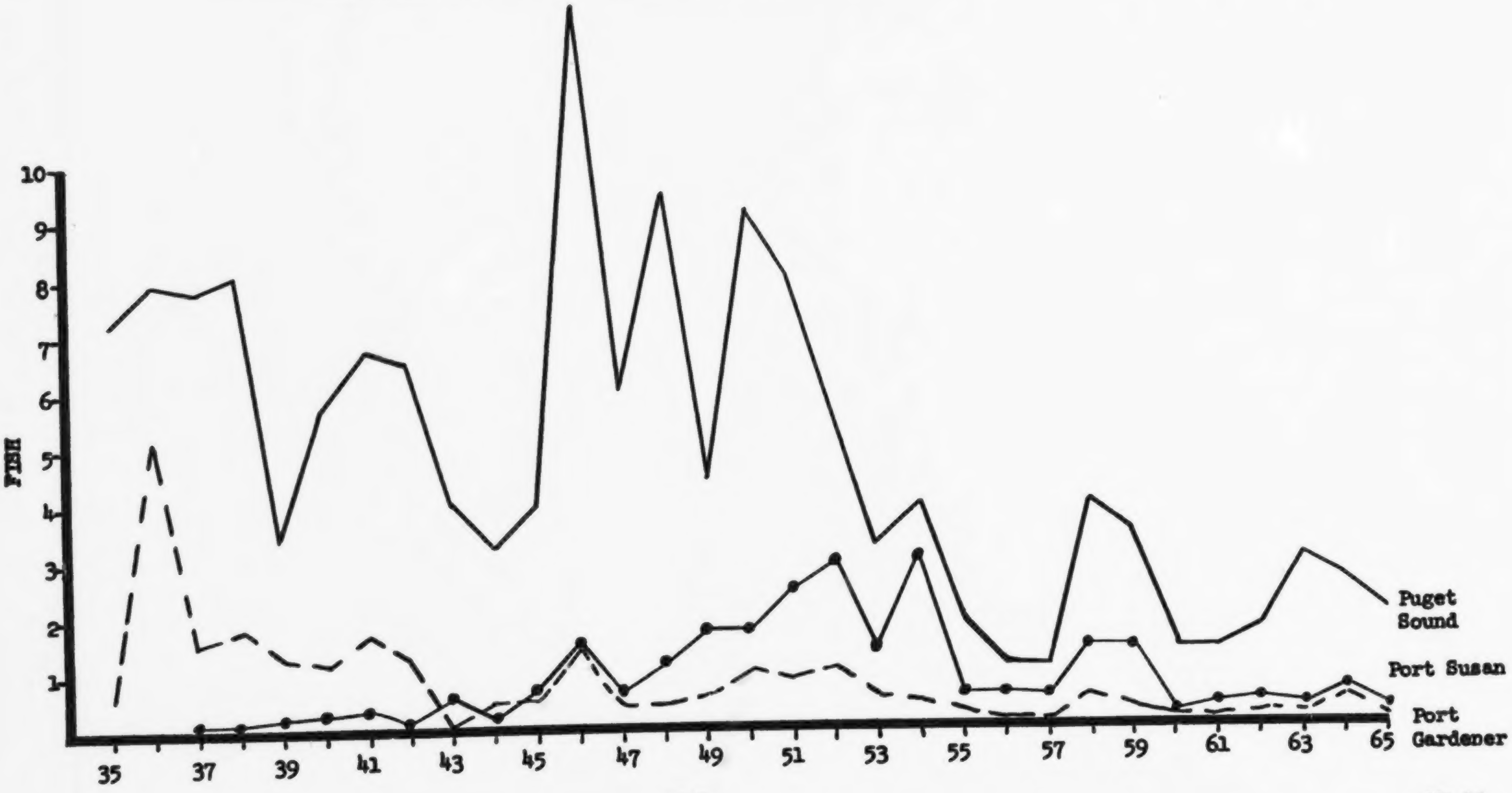


Scale: Puget Sound in Hundred Thousands of Fish
Port Gardener and Port Susan in Ten
Thousands of Fish

MK 10

Total Commercial Chum Salmon Landings (Gill Nets, Drag Seines, Traps) in Port Susan and Port Gardener Areas as Compared to Puget Sound, 1935 - 1965, in Numbers of Fish. Data is from Washington State Department of Fisheries Annual Reports.

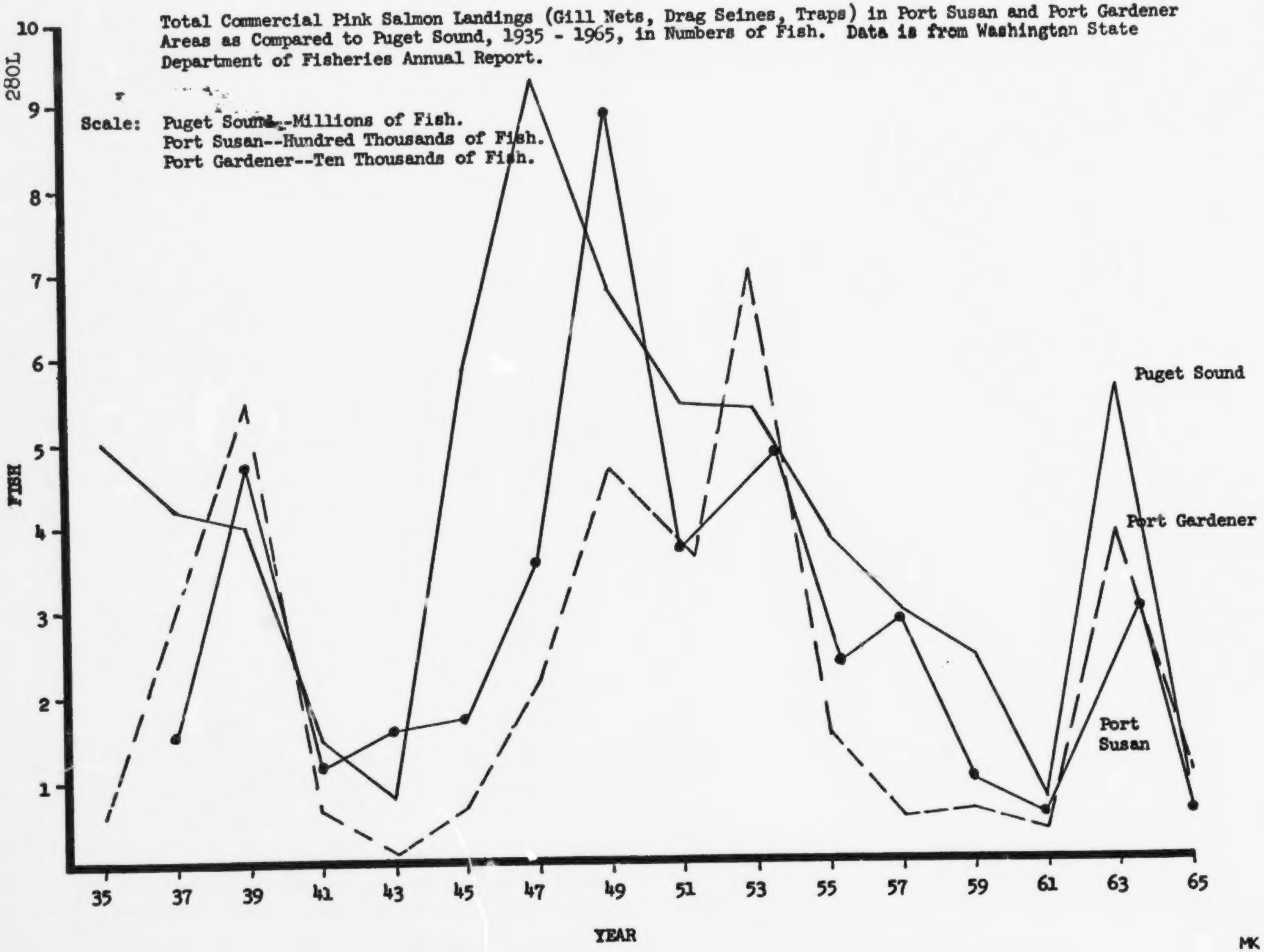
Scale: Puget Sound in Hundred Thousands of Fish.
Port Susan and Port Gardener in Ten Thousands of Fish.



MK 11

Total Commercial Pink Salmon Landings (Gill Nets, Drag Seines, Traps) in Port Susan and Port Gardener Areas as Compared to Puget Sound, 1935 - 1965, in Numbers of Fish. Data is from Washingtan State Department of Fisheries Annual Report.

Scale: Puget Sound--Millions of Fish.
Port Susan--Hundred Thousands of Fish.
Port Gardener--Ten Thousands of Fish.



MK 12

MK 12

STATEMENT OF EDWARD J. GRUBLE, PRESIDENT
OF THE
OYSTER INSTITUTE OF NORTH AMERICA

MR. GRUBLE: Mr. Chairman, members of the Conference.

My name is Edward J. Gruble. I am President of the Oyster Institute of North America and speak today on behalf of the shellfish industry of the United States.

Before going into my prepared statement, I would like to take a few minutes to run a movie which speaks eloquently of the pollution conditions in Bellingham Bay and shows the conditions much better than can be expressed by words in these reams of testimony we have heard. So if I can have your indulgence for just a few minutes, I will run the movie.

We will make copies available for the record.

CHAIRMAN STEIN: All right. The movie will be an exhibit on record at the State office in Olympia, Washington, and Federal offices in Portland and in Washington, D. C.

(The movie referred to is marked Exhibit 6 and is on file at the FWPCA Headquarters in Washington, D.C., with copies on file at the FWPCA Regional Office in Portland, Oregon, and the State of Washington WPCC office in Olympia, Washington.)

(The following commentary accompanied the showing of the movie:)

MR. GRUBLE: This is the Bellingham mill, Bellingham, Washington, producing at the present time approximately 527,000 tons of pulp. Some of the conditions that are created by the discharge from this pulp mill are sludge wastes on the bottom, foaming conditions, discoloration of the water, the generation of hydrogen sulfide, loss of wood chips. I point out that the piling shows no sign of barnacle growth, indicating that barnacles will not grow in this water, and a general deterioration of the water in Whatcom Waterway. This shows graphically a discharge from the pulp mill, showing losses in water quality that are polluting the waters of Whatcom Waterway.

In the distance is the discharge with spray used to minimize the foaming conditions in the harbor.

This is a picture taken about two miles from the pulp mill in Bellingham Bay showing a plume of water discoloration, with seagulls in the center of the picture where the plume of water is. Now, despite some of the remarks made here today, it is a known fact that seagulls prey on fingerling salmon that are distressed and are near the surface of the water. This is a plumed discoloration.

In this movie I personally took some fingerling salmon and some larger salmon and put them in the water. Not being a biologist, I did it my way, from a practical standpoint, to see what would happen to these fish. The fact is that these fish cannot survive in the polluted waters of Whatcom Waterway nor in any of the plumes of high concentrations of liquor as they are distributed through Bellingham Bay.

You will note that these fish will be in distress very shortly and that they will be floating bottom side up within a very short period of time. These were the larger of the two fishes that were used in the experiment. It has been brought out by testimony that these fish sink to the bottom and these fish gills are not perceived by people very often. Those that have a tendency to be in distress near the surface are exposed to the predators and are usually picked up by the birds in the vicinity.

The fish were supplied by the Washington State Fisheries Department and were handled expeditiously to the point of this discharge here to the water.

Discoloration from this mill has been visually traced for a distance of six miles from the mill.

This picture will show the discharge of pollution into the waterway from the bleaching process, it will show the red water from the sulfiting process, the digester liquor. Millions of gallons of this discharge are being put into the waters of this area every day by this mill. Discoloration, oxygen depletion, all of the other symptoms of pollution are evident in these pictures and are a matter of record, have been in the files of the Pollution Control Commission and other agencies for many years now. Sawdust particles traceable to this mill have been found at distances of ten miles away on Samish Island, brought there by tide and wind conditions.

You note now that the discharge has changed in color from red to green. In the background can be seen a spraying system which is used to try to hide the foaming conditions that prevail in this area at times.

I do not pretend to be a biologist, but the facts are that this is pollution raw and simple.

Regulations in the standards that have been on the books of the State of Washington since 1945 call for a cessation of this type of operation.

We have foam from the discharge of the digesters showing up in the background. The red liquor is starting to come out from underneath the log boom that has been placed there to hold in some of the foaming conditions that are incident to this operation.

These pictures were taken on a low tide to show the outfalls as they are submerged at high tides.

I did not intend to show this picture at the present time, but in view of some of the testimony that we heard here today I thought that it was proper that we see exactly what we are talking about.

We don't want to confuse the issue with figures and charts and all this. I took Economics out at the University of Washington, graduated from that school, and sometimes after listening to these reports I regret I didn't join the biology group. (Laughter) But I did take a course in Economics there.

These are all signs of stream pollution in that Whatcom Waterway, and we will shortly show that the distance of some three miles away we will run through plumes of discolored water which are caused by the discharge of sulfite liquor from this plant.

Wood chips which the wind carries off of the barges are lost in the operation of unloading the barges, and these wood chips create a pollution problem. These wood chips flow as far away as Samish Islands from this scene of operation.

This shows discoloration in the water attributable to the discharge from the mill.

These pictures were shot a distance of some two miles from the mill.

This is heading towards the mill with the mill in the far background.

This is the conclusion of the flim.

I don't think it takes a scientist or a biologist to recognize pollution when we see it in this state.

I would like to take this opportunity to first express the sincere appreciation of the entire shellfish industry, and particularly that of the hard-pressed North Puget Sound segment, for the diligent and comprehensive investigation conducted by the technical staffs of the joint Federal-State study into the pollutional effects of pulp and paper mill wastes in the Puget Sound. That the effort was thorough is attested to by the report reviewed here today, more than 450 pages of data, substantiated by scientific findings now in the files of the Northwest Regional Office of the Federal Water Pollution Control Administration.

The report adequately speaks for itself and stands as a classic example of unbiased scientific research of a complex problem,neither simple of analysis nor easy of resolution. Certainly all who have closely followed the four years of hard work completed by the dedicated scientists, technicians and others must admit that the job was well done. That this work was accomplished at all is a credit to the perseverance of the Federal Water Pollution Control Administration and its staff.

These findings establish beyond any reasonable doubt that sulfite waste liquor discharged by pulp mills into the marine environment of Puget Sound is pollution having a deleterious effect on the marine biota of the receiving waters.

This report does not stand alone. It is substantiated by more than 25 reports and studies compiled by various State, Federal and independent agencies during the past 20 years.

As long ago as 1946, investigation into the decline of the native oyster industry of the State of Washington revealed damaging effect of sulfite waste liquor to the Olympia oyster. This investigation, of some 18-1/2 months duration, is documented in Washington Department of Fisheries Biological Report 49A and was conducted by Donald L. McKernan, Vance Tartar and Roger Tollefson. It established an undeniable correlation between oyster mortalities and low concentrations of sulfite waste liquor.

In 1957, Technical Bulletin 22 entitled, "An Investigation of Pollution in Northern Puget Sound", released by the State Pollution Control Commission reported that:

1. Substandard concentrations of dissolved oxygen,0 to 4.9 parts per million, were detected in Bellingham Harbor.

2. That sulfite waste liquor concentrations were detected in all stations in Bellingham Harbor and many of the concentrations in excess of the known toxic limits for salmonoid fishes.

3. Sulfite waste liquor concentrations, as indicated by the Pearl-Benson test, were found to be widely distributed throughout the survey area. A maximum of 45 parts per million was detected over a commercial oyster growing area in Samish Bay.

In 1960, Pacific oyster larval bioassays reported by Charles Woelke of the State Fisheries Department summarized findings as follows:

"Fresh sulfite waste liquor affected 48-hour development of fertilized Pacific oyster eggs at concentrations of 2 parts per million and greater; above 18 parts per million, fresh sulfite waste liquor caused 100 percent of the developing 48-hour larvae to be abnormal; in some experiments over 90 percent of the larvae were abnormal at 12 parts per million."

In 1962 a water quality study of Bellingham Bay by the Fisheries Department summarized that study as follows:

"The study has again demonstrated the presences of sulfite waste liquor throughout the inshore waters of Bellingham Bay and also to some extent in Hale Passage. The range of concentrations apparently has not diminished from the values obtained as early as 1956. Oxygen values at Station II, Bellingham Harbor, were zero and correspond to the zero readings obtained during the investigations of this area in the late 1950's. The live box study demonstrated that the acutely polluted water at Station II could not support fish life for more than a few minutes. Disperson of these waters through tidal and wind action could be expected to extend the toxic conditions throughout the greater part of the Bay."

Samish Bay, once the leading area in the production of Pacific oysters, producing more than 100,000 gallons per year, has dropped to insignificance in the shellfish economy of Washington. This decline in production is directly correlated to increased manufacture of pulp by the Bellingham mill and the resultant increase in waste discharges.

These are but a few of the observations and conclusions that are a part of the long record unequivocally establishing sulfite waste liquor discharged by pulp mills as a toxic, oxygen depleting pollutant affecting the marine resources of North Puget Sound.

It is no longer a question of whether or not sulfite waste liquor is a harmful pollutant, but rather the question is when will this pollution be significantly reduced in order to protect the marine resources of this State and other legitimate water users who are suffering damage.

We have serious reservations, based on past experience and history, as to the State's ability to effectively control and abate pulp mill pollution under either existing regulations or proposed water quality standards now being reviewed by the Federal Government.

During the 12 years since inception of the permit system in 1955, permits issued by the State Pollution Control Commission have progressively permitted individual pulp mills to escalate the volume of their permissible waste discharge rather than curtail this discharge.

A case in point is one of the mills under scrutiny today --the Bellingham pulp and paper mill complex of the Georgia-Pacific Corporation which started out in 1926 as a 22-ton-per-day pulp producer and is today manufacturing approximately 527 tons per day.

In 1956 this mill received a permit from the Pollution Control Commission dated June 6th which stipulated that "waste not to exceed 31,500,000 gallons per day may be discharged to Bellingham Bay" and further stipulated that "within one year of the date of issuance of this permit, a firm proposal shall be made to the Commission indicating the method by which BOD and total waste solid characteristics of spent sulfite waste liquors, including washing, will be further reduced to achieve a total reduction of at least 85 percent." This permit expired on June 10, 1957, and was extended for another two years despite evidence pointing to the widespread dispersal of the toxic discharge throughout the Bellingham-Samish Bay system and over the complaints and protests of oystermen and other water users of the area.

In December 1962 this mill was given a five-year permit expiring on December 18, 1967. It allows the mill to discharge wastes not to exceed 45,000,000 gallons per day into Bellingham Bay, an increase of 13,500,000 gallons of waste per day over that of the 1956-59 permit.

A company-initiated by-product program started in 1945 using sulfite waste liquor for alcohol production does not eliminate the waste disposal problem, since the fermentation residues are nearly as objectionable as the original liquor. Other by-products developed and manufactured by the company using components of sulfite waste liquor have obviously failed to significantly reduce the effects of the waste discharges on the marine biota as evidenced by the information gathered by the joint study. Expansion of this program as a means of resolving the mill's pollution problem though commendable can hardly be regarded as a rapid and adequate solution. Testimony of Mr. E. Gray King, Research Director for the mill, presented to the State Pollution Control Commission on March 12, 1958, asserted, "about seven years are required for the conception of the idea to final successful commercial acceptance of the product." We have been waiting for some 22 years with little evidence that this approach to pollution abatement has alleviated the pollution problem created by this mill.

Also of significance in any future State effort to abate pollution is passage during the 1957 State Legislature of Substitute Senate Bill 52 which amended the Administration Act and contained an amendment to that act which would provide that during court review of agency findings the reviewing court may set aside such findings which are clearly erroneous in view of the entire record as submitted "and the public policy contained in the legislation authorizing the decision." It has been reliably reported that the amendment was sought and obtained primarily by attorneys representing one of the pulp and paper companies and was specifically intended to apply to the law of the Pollution Control Commission. This amendment broadens the scope of judicial review of administrative findings sufficiently to measurably delay conclusion of contested cases.

Under these circumstances and based on the many years of experience and knowledge gained in our unsuccessful efforts to have this source of pollution abated, it is our firm belief and conviction that if effective water quality standards are to be adopted and successful enforcement of abatement regulations is to be achieved in the navigable waters of the State of Washington, the Federal Water Pollution Control Administration must do the job. Further, to be effective in preventing continued degradation of these waters, pollution abatement regulations must be based on the recommendations as outlined in the joint Federal-State study. Anything less than immediate implementation of these recommendations would fail to achieve significant abatement and result in continued and unwarranted injury to the marine resources and other water users of this area.

In closing, I would be remiss if I failed to mention the other pulp mills involved in this investigation. Failure to do so does not constitute an implied admission that we are satisfied with the conditions existing in their respective areas. They are as guilty of polluting the waters of the State of Washington as is the Bellingham mill. We concur with the findings as revealed by the joint study and endorse the recommendations for pollution abatement measures as set forth with respect to the individual mills mentioned. We reiterate our belief that effective abatement cannot be achieved on the State level and that the responsibility for pollution abatement where navigable waters are concerned is that of the Federal Water Pollution Control Administration.

As noted by the editorial comment in the April 27th issue of the Post-Intelligencer, "The day is past when industry, regardless of its contributions to the economy, can be permitted to poison a region's natural resources. The responsibilities of industry to make improvements in the treatment of its wastes seems clear and the need immediate."

Thank you, Mr. Chairman.

CHAIRMAN STEIN: Thank you, Mr. Gruble.

Are there any comments or questions?

MR. HARRIS: I would like to offer a correction, Mr. Gruble. On Page 5 you mentioned the 1957 Legislature. That was the 1967 Legislature.

MR. GRUBLE: Thank you, Mr. Harris. Yes, that is a misprint.

CHAIRMAN STEIN: There is one more point. You know, some people get after us, some after the State, some after the industries, some like or don't like the report. But I think the state of the law and the Federal policy is that we are going to work in cooperation with the State Water Pollution Control authorities in dealing with the pollution problem and we would hope, if we can get a successful conclusion to this Conference, that the day-to-day operation will rest with the State agency.

I think that this should be made abundantly clear. We are here to assist the State and work with the State and do something like this, but I do not think the present scope of the Federal law is such, and I am not sure that it even should be desirably such, that the Federal Government should be responsible for controlling pollution of the navigable waters. The primary rights and responsibilities for this rest with the states, and in the case of Puget Sound it does rest with the State of Washington.

Are there any other comments or questions?

MR. HARRIS: No.

CHAIRMAN STEIN: If not, thank you very much, Mr. Gruble.

We will continue with all the shellfish people before the luncheon break and then pick up after that.

Mr. Harris.

MR. HARRIS: The next speaker representing the shellfish industry is Mr. Bob Bower.

STATEMENT OF BOB O. BOWER
OF THE
OYSTER INSTITUTE OF NORTH AMERICA

MR. BOWER: Mr. Chairman, Conferees, ladies and gentlemen.

I am Bob O. Bower. I am a past President of the Olympia Oyster Growers Association, past President of the Pacific Coast Oyster Growers Association, and at present a member of the Board of Directors of the Oyster Institute of North America. I am presenting a statement here today on behalf of the Puget Sound Oyster Growers Association.

I prepared this panel (indicating) not primarily as an exhibit. Obviously it will be hard to enter into the record, so I am going to refer to the size of the animals in order to get the size into the record.

I mainly brought this panel along because in a fairly recent radio program on a Seattle station Mr. Benson, of the Pulp and Paper Association, said sulfite waste liquor must not have been our problem in the Olympia area because there had been no change in the Olympia oyster since the pulp mill shut down. As manager of Ellis Brothers Oyster Company I have been charged with handling an Olympia oyster bed area for several years, in fact since 1945. We have been running an estuarial experiment for 40 years in South Puget Sound. As lay people we know what sulfite waste liquor does. You put the liquor in the water and the whole area declines; you take it out, the area comes back.

The example here, I just happened to have a sample of Olympia oysters caught in 1956 taken out of the water in 1957. They are about the size of the eraser on a lead pencil. These caught in 1966 and taken out in 1967, as you can see, are four or five times that size. Mr. Benson says there has been no improvement.

I appended these other animals here. 1965 set, 1964 set, and 1963 set, to show what our oysters do.

We could never get with the pulp mill running an oyster even the size of these '64 set. Now we are getting them this big (indicating).

This (indicating) is an example of the set that we got this summer. Already it is bigger than the year-old stuff with the pulp mill running. As another example, we couldn't get a ground set with the pulp mill running. We had to put out spot collectors such as this covered with sand and cement. This is an example of a late summer set caught this summer, caught on a clam shell, on a Pacific oyster shell and on an Olympia shell.

CHAIRMAN STEIN: Would you let us see that?

MR. BOWER: The Olympia oyster production from the Ellis Brothers beds prior to the pulp mill time ran around 800 bushels per year every year. When we took the beds over in 1945 we ran as high as 700 bushels, and it steadily declined as the pulp mill production increased, until in 1956 we went out of business.

Since that time we have averaged around 300, a little better than 300 bushels a year. This year it is over 400. We think we will go to 550 off the same beds.

Now, in case Mr. Benson wants to take a look at this to convince himself I am not kidding him, Floyd

Hicks, Congressman, former Superior Court Judge, made a survey of our beds at the time they were in the worst condition, in company with me and several pulp mill personnel. He said at that time, "It is obvious, even to a layman, that there is something wrong with these beds." I would like to challenge Mr. Benson to get Mr. Hicks and come back and look at our beds now and see if Mr. Hicks won't say that there has been an improvement.

I must apologize for the condition of some of these oysters. They were alive when I put them on there. Some of them are starting to gape. I think you recognize the fact that yesterday afternoon they were subjected to a great deal of hot air. (Laughter)

They also have had three trips through the Tacoma atmosphere. (Laughter)

Some of the items in this report have been presented before, but we believe a restatement at this time will prove informative. We sort of feel that we should present about three parts per million of background color.

According to Pollution Commission records, the 1945 Pollution Control Act was passed mainly because of the damage to marine resources by pulp mill discharges. Twenty-two years later pulp mills are still the major polluters of State waters.

In 1956, after years of inactivity, goaded by demands of many conservation groups, the Commission issued temporary permits requiring pulp mill cleanup. These permits expired and were renewed amid calls for more research and consideration of economic factors. Two supposedly independent scientists made a survey and submitted recommendations. Later one of the scientists reported he was under tremendous pressure in setting recommended standards for toxic substances higher than he would have liked.

An examination of pertinent correspondence gives an insight into the manner in which the present pulp mill waste permits were prepared and issued.

From a letter from the then Executive Secretary of the Northwest Pulp and Paper Association to his Washington trustees, August 1960:

"In talking with me and members of the industry, the Commission Director has asked that we 'not get excited or disturbed' over the proposal or language. He feels the proposal will get the oyster growers and fisheries off his back. He says he doesn't intend to require 'full' recovery and he strongly intimates that a number of the sulfite mills might now qualify for permanent or long-term temporary permits."

I will correct you if you have the mistaken assumption this is not the present record.

A letter from the then Director of the Department of Economic Development to the Commission--and for those of you who are uninformed, the Department of Economic Development is not supposed to even be concerned with the Pollution Control Commission--letter to the Commission dated November 5, 1962:

"I reviewed the attached sample draft today. I also read it over the phone to Weyerhaeuser. With the exception of the opening sentence in Item 8, I think it will be reasonably acceptable."

A letter from a member of the Commission to the then Director of the Department of Economic Development, November 8, 1962:

"My feeling is that the permits in their present form involve virtually complete capitulation to the demands of the industry."

A letter from the then Director of the Department of Economic Development to the members of the Commission, November 9, 1962:

"Here is the latest draft of permit language. It has been reviewed with the attorneys for all the mills involved, and reworded to overcome their objections."

A letter from one pulp company to the then acting Director of the Commission, November 21, 1962:

"Following the recent discussions involving the Director of the Department of Commerce and Economic Development, final agreement has been reached upon the wording of the basic provisions of the permits which the Commission will issue to the various mills. We have prepared, and enclose herewith, drafts of the permits which will be issued to our pulp mills."

The evening before these permits were adopted unanimously one member of the Commission stated to me, "I have to vote in favor of the permits or jump out the window."

We have noted in the past the extreme sensitivity of pulp mill personnel to any mention of disposal construction. Such mention usually elicits cries of shut-down, more research, consideration of the findings of pulp-employed biologists and submission of long columns of figures showing the great cost of what already has been done. These figures are presented self-righteously, as if creating a cesspool and then cleaning up part of it were an act of great value to the public. The fact that monies spent for control of wastes are usually more than recovered in chemical savings and by-products is rarely mentioned.

On the other hand, a speed limit for sulfite waste liquor has long been a pulp mill request. Therefore, we wish to review the record and repeat a recommendation, believing that how the mills accomplish the desired quality of receiving waters should not concern the Commission.

The water standards adopted in 1945 stated, "No industrial waste shall be discharged into any of the waters of the State that will cause toxic conditions that are deleterious to fishes and related forms." The vague and incondite standard "less than acute or chronic problem levels of toxic substance" adopted this year cannot be regarded as an improvement.

A Washington Department of Fisheries report, dated 1949 and signed, among others, by Roger Tollefson, states, "It is recommended that no SWL be permitted in Olympia oyster waters since the hypothetical threshold of tolerance lies between concentrations of zero to thirteen parts per million."

A report from the Association of Washington Industries, dated 1957, recommends, "No concentrations of substances toxic to man, animal or plant life."

A Washington Department of Fisheries report, dated 1958, contains the following biologists' recommendations on sulfite waste liquor in State waters. And all of these men that I am going to name have had great experience in the field of testing animals and testing sulfite waste liquor.

Dr. H. C. McMillin, not over one part per million recommended.

D. R. Johnson, not over two parts per million in shellfish areas, which embrace most of the shorelines of the Sound.

J. E. Lasater, allowable maximum concentration no greater than two parts per million.

G. A. Holland, a standard of two parts per million must be statewide.

Cedric Lindsay, over any shellfish areas of the Puget Sound region, average sulfite waste liquor concentrations should not exceed two parts per million while maximum concentrations should never exceed four parts per million.

R. E. Westley, average SWL values shall not exceed two parts per million in oystering areas.

A letter to Bob Bower from Donald McKernan, Director of the Bureau of Commercial Fisheries, dated January 1958, states:

"It is recommended that the statement specifying a maximum of three parts per million of SWL beyond one-half mile from the point of discharge be changed to indicate that this tolerance may be lowered if later research proves this level to be harmful."

A Washington Pollution Control Commission report dated February 1960, by Gunter and McKee, states:

"The permit system falls short of its objective when it specifies effluent requirements to the exclusion of quality criteria of receiving waters,"

and

"We recommend that the Commission adopt standards of water quality over and near oyster beds in terms of the modified Pearl-Benson Index (concentration in parts per million by volume of SWL)."

A Pollution Control Commission statement dated July 1960 and signed by Roger Tollefson and Dr. Jerome E. Stein, among others, states:

"As measured by the Pearl-Benson Index test presently in use by the Fisheries Department, the background value generally does not exceed three parts per million, except in some isolated instances or areas."

And there is agreement in regards to PBI values determined by the fisheries method in North Puget

Sound.

The joint Federal-State report, "Pollutional Effects of Pulp and Paper Mill Wastes in Puget Sound," dated March 1967, recommends:

"Reduction of SWL discharges so that concentrations are 10 parts per million or less beyond the waste dispersion zones."

This same report states, Page 104:

"It is concluded that waste solids discharged by the Georgia-Pacific mills cause substantial damage to benthic life in Bellingham Harbor."

The Bellingham Pulp Mill waste permit which expires December 18, 1967, in Section I, Sub 1, Paragraph f, states:

"Detrimental sludge deposits, if any, which violate the Pollution Control Act are to be removed and disposed of in a manner approved by the Pollution Control Commission."

This clause and similar clauses in other pulp mill permits are apparently to be ignored by the Commission or excused as "an exceptional case" as provided in the recently adopted State Water Standards.

In view of all these submitted facts and the continued procrastination of the Pollution Control Commission and the pulp mills alike, we request the Federal Pollution Control Administration to assume jurisdiction and after adopting a realistic numerical standard for sulfite waste liquor take the necessary steps to insure enforcement. The pulp mills have been "exceptional cases" long enough.

We append to this report the recommendation we submitted in Bellingham to the Commission in 1958, which reads as follows:

"RECOMMENDED WATER QUALITY STANDARDS.

"After a thorough study of various proposals, we recommend the adoption of the following water quality standards, believing that these standards will provide for equitable industrial development and, properly administered,will protect marine resources as well as the tourist and recreational facilities of our State.

"We recommend that these standards be adopted by the Washington Pollution Commission for all State waters with the exception of authorized dispersal areas in the vicinity of industrial and municipal sewer outfalls as follows:

"1. Concentrations of pulp mill digester liquor shall not exceed three parts per million at the outer limits of authorized dispersal areas.

"2. No dissolved oxygen concentrations below five parts per million attributable to a waste or pollutant.

"3. A pH range of five to nine.

"After adoption of these water quality standards, the Commission should define dilution or dispersal areas for each industrial and municipal sewer outfall.

"The location of sewer outfalls and the extent of dispersal areas should be compatible with the needs of other water users and public and private marine resources.

"Permits authorizing dilution or dispersal areas should include a statement that substandard water conditions which may be attributed to the holder of the permit will be considered a violation of the Pollution Control Act."

This was submitted to the Commission at their meeting in Bellingham in 1958. Senator Henry Jackson, of Washington State, Chairman of the Senate Committee on Interior Affairs, in a speech September 3, 1967, said:

"The public has become aware that something can be done about pollution of our natural resources. Interested people must speak out and influence public officials and agencies to get things done."

We are sending Senator Jackson a copy of this statement as proof we have again asked for something to be done about the major polluters of Washington waters, the pulp industry.

Thank you.

CHAIRMAN STEIN: Thank you, Mr. Bower. Are there any questions or comments?

MR. HARRIS: I have no comment.

CHAIRMAN STEIN: Do you?

MR. POSTON: No.

CHAIRMAN STEIN: I would just like to suggest one thing, Mr. Bower. When you talk in terms of the State, and I assume us or any regulatory agency, not being concerned, I am hopeful that we can get this to a closer arrangement or understanding. Now, I recognize the problems.

You know, in addition to working very closely with those duck farmers and oyster growers, I have also been working during the past year in the Penobscot Bay area around Belfast, Maine, and Bangor, where we have a couple of chicken processing mills, a couple of pulp and paper mills, which I hope will remain nameless, for this record anyway, and several of the--they are not represented by anyone here--and the shellfish industry. They don't grow oysters up there, just clams. Since 1948 those clam beds have been repeatedly closed, closed, closed, until now they are all closed.

Again, what we have done is put forth effort. We were successful in getting the representatives of the clam industry and representatives of the pulp and paper group to sit down together and try to work out the problem. In that instance, they are still in the negotiation stage, but I think we are very, very close. Besides primary treatment, we are talking in terms there of about an 85 percent reduction in the sulfite waste liquor, give and take a little, and this is how close we are.

But the point is--and experience has shown--that unless the oyster industry makes a step to try to put themselves perhaps in the role of the pulp and paper industry in the same way as we have with the others to get together, I don't think under our system we can work out a solution without going to court or going to the mat. Again, my experience has been that a solution which is acceptable to the various parties and various interests in the use of a water resource is not impossible and can be worked out if we put our minds to it. We have to be aware what any industry whether you or the pulp and paper industry, can do technically and what they can do economically. This is something we have to balance.

And I think given an individual problem, we can very often find the solution. It is often these philosophic differences that keep us apart and keep us from talking.

MR. BOWER: Well, I would like to point out, Chairman Stein, that I believe you are an incurable optimist when you stated yesterday, "we are getting closer" because the pulp man stated that the straight liquor was toxic. The oyster people, 50 percent of them, are not optimistic and the other 50 percent are pessimistic that we are going to get anything done, even out of this Conference.

But we want to be on the record that we have requested something to be done, just as we have for the last 30 years, and we surely wish you every luck. We hope that the pulp mills will take the suggestion that Mr. Gruble read out of the P-I editorial and come to realize that we can all live together, but they have to do their share.

CHAIRMAN STEIN: If I weren't an incurable optimist, I wouldn't be in the business; I would transfer to the fiscal department.

MR. BOWER: Thank you.

CHAIRMAN STEIN: Mr. Harris.

MR. HARRIS: I would like now to call on Mr. R. N. Steele.

STATEMENT OF R. N. STEELE
OF THE
ROCK POINT OYSTER COMPANY

MR. STEELE: Mr. Chairman, Conferees, ladies and gentlemen.

To clarify, my name is R. N. Steele. I am the owner of the Rock Point Oyster Company in Samish Bay. We are still salvaging oysters from Samish Bay, but I make my living in the waters of Deboh Bay off Hood Canal growing oyster seed.

I have made a study of the report entitled "Pollutional Effects of Pulp and Paper Mill Wastes in Puget Sound", March 1967. It is a very good report of conditions as they exist in Puget Sound.

As an oyster farmer living in a very fast-growing state, I am particularly interested in the future of our vast natural resource, the water of Puget Sound. A recent study made by Mr. Ron Westley of the Washington Department of Fisheries lists the maximum potential of oysters in Puget Sound as six billion pounds a year. Think of it, equal to the entire fishery of the United States, six billion pounds. I am wondering if we are here now today to decide what part of this six billion pounds of the potential can ever be produced.

I know from personal experience as an oyster producer just what a small concentration of sulfite waste liquor can do to an oyster bed. It can completely destroy all commercial value. Sulfite waste liquor in low concentrations may not kill oysters, but the growth and fatness are disturbed to the point that you are right out of business.

The recommendations set forth in this report, if followed, would certainly help clean up our waters, but it is my opinion that the reduction of wastes should be watched and controlled at the mill outfall rather than by monitoring the water. As far as the oyster is concerned, this outfall should be eliminated and the wastes burned or evaporated, for it cannot be proven that sulfite waste liquor, even in minor concentrations, does not have some adverse effect on oysters or its reproductive cycle.

I compliment you on this report and ask again that you keep our standards high, for without high standards we shall certainly lose the most productive body of water in the world, Puget Sound.

Thank you.

CHAIRMAN STEIN: Thank you.

Are there any comments or questions?

MR. HARRIS: I have no comments.

CHAIRMAN STEIN: If not, thank you very much, sir.

MR. HARRIS: The concluding speaker in this series will be Mr. Bailey, Mr. R. H. Bailey.

STATEMENT OF R. H. BAILEY
MANAGING DIRECTOR
CITIZENS FOR CLEAN WATERS

MR. BAILEY: I will hurry this up so we can get to lunch.

I have as exhibits here two very fine aerials of this North Sound area, one showing this proposed disperson zone, which I will leave with you.

CHAIRMAN STEIN: I believe if you wish, without objection, we can put these in the record.

MR. BAILEY: Yes.

CHAIRMAN STEIN: I hope they will print up and reproduce. We will do the best we can.

MR. BAILEY: You should print up a good cut of those.

CHAIRMAN STEIN: Well, we will do the best we can. I think in this area our technicians are impeccable, and if it can be done I hope these can come out.

These will appear with your testimony.

(The aerial photographs referred to follow on pages 315a and 315b.)

MR. BAILEY: Mr. Stein and members of the panel and ladies and gentlemen.

My name is R. H. Bailey. I am Managing Director of Citizens for Clean Water. I have spent 36 years in the oyster business and have owned Padilla Bay tidelands for 44 years.

Scattered native oysters could still be found in Padilla and Samish Bays in the 1920's. These Olympia type oysters disappeared in the early 30's. Serious effects became apparent in December 1934 when the emaciated condition of the Pacific type oysters made marketing difficult.

The pulp mills fought every effort to pass pollution bills in 1941 and 1943. The claim was that there was no known way to abate pulp mill pollution. One of our leading producers, pulp producers, the Weyerhaeuser Company, eliminated this alibi by developing the magnesium-oxide process, which regenerated and reused the chemicals and evaporated 80 to 85 percent of the digester liquor.

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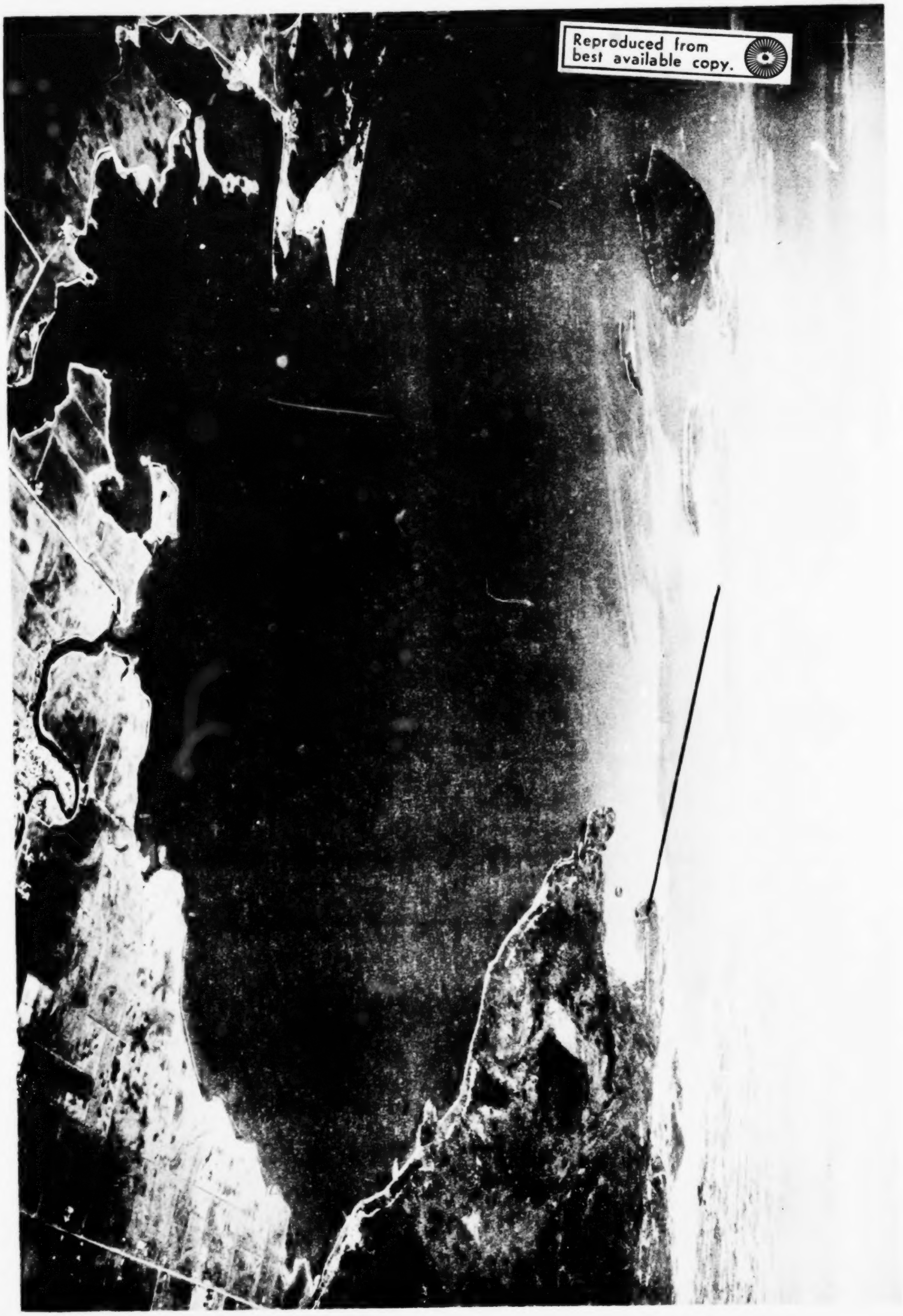

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Sulfite liquor contains more than enough heat units to evaporate itself. The savings were reported to be sufficient to pay for the installation over a 15-year period.

The Weyerhaeuser process should have solved the pulp mill pollution problem, but no other mills adopted the process in the State of Washington. Oddly enough, the Bellingham Pulp Mill also operates the Ketchikan, Alaska, pulp mill, which uses the Weyerhaeuser process to eliminate over 80 percent of its pollution in that fisheries area. Federal regulations simply required that all Alaska pulp mills eliminate 80 percent of their liquor before they could operate at Ketchikan and Sitka.

The Washington Pollution Control Law was passed in 1945. The Pollution Commission was to require that:

"All known, available and reasonable methods be used by industry and others to prevent and control pollution of the waters of the State of Washington."

Attempts for solving the industrial pollution problem have failed miserably, largely due to the inability of the Pollution Commission to force the pulp mills to adopt modern methods. Great oyster growing areas of North Puget Sound have all but disappeared. Clam areas suffered the same as oysters. The Dungeness crab landings at Anacortes are down from a million crabs annually to a few thousand per year.

The State of Washington very properly called in a consultant on this problem in 1961. The Federal Government was well qualified as the consultant and also furnished one and a half million dollars necessary to gain the scientific data for a comprehensive report. The Federal Government also had a specific interest as the navigable waters of Puget Sound had always been under Federal jurisdiction.

There is one all-important recommendation of the report, namely:

"Provide primary treatment of all solid-bearing wastes to provide for (a) removal of all settleable solids and (b) 70 percent removal of volatile suspended solids."

The Washington Water Pollution Control Commission,by its June publications, has rejected any use of the Federal report. No mention of the above recommendation or the limiting of the sulfite waste liquor to 10 parts per million beyond an initial waste dispersion area. The State proposes no meaningful waste dispersion zone, including all of Bellingham Bay north of the line from

Post Point to Lummi Peninsula as the report recommended. The above primary treatment is recommended for all sulfite pulp mills in Washington, but a more detailed analysis of the Bellingham pulp mill operation is as follows.

This sulfite pulp mill was built in 1926, with the first full year of operation in 1927. It has maintained an increase in its pulp production every succeeding year.

The Bellingham Pulp Mill produced 8,075 tons of pulp in 1927. Production doubled to 16,561 tons in 1928, tripled in 1929 to 25,858 tons, increased fourfold by 1934 to 32,899 tons,increased eightfold in 1938 to 47,682 tons, increased twelvefold in 1940 to 100,839 tons, increased eighteenfold in 1942 to 146,000 tons, and increased twenty-fourfold at the present time in 1966 to 192,000 tons, which means that every 20-month period since 1927 we have had the equivalent of a new pulp mill of the original capacity built at Bellingham with a corresponding increase in sulfite liquor pollution.

There was no reduction in the discharge of millions of gallons of sulfite liquor until 1945, when the alcohol plant was built. This plant operates on the fermentable sugars which make up 2 percent of the total digester liquor, 5,000 tons from this 500-ton pulp mill, or 100 tons per day.

A very rough separation is made of the concentrated digester liquor by forcing it out by adding cool wash waters. The thermostat-operated discharge valve shuts off when the discharge becomes cooler. The production of 11,000 gallons of alcohol from 65 tons of fermentable sugars indicates that the feed is 65 percent sulfite waste liquor and 35 percent wash water. This operation has no effect toward reducing the toxic effect of sulfite waste liquor on the fisheries industry.

The other by-products call for evaporation of this 65 percent solution of sulfite waste liquor to a sludge, after which spray driers reduce the sludge to a powder for which the pulp mill has found many uses. The pulp mill produces over 5,000 tons of sulfite waste liquor per day. Computed at 12 percent of solids, we have 600 tons of solids per day.

The alcohol plant takes out 65 tons or 11 percent, and if--and the "if" is capitalized--there is sufficient by-product market, these plants take out 135 tons or another 22-1/2 percent.

Under these optimistic conditions, we still have a discharge equivalent to that of a 330-ton sulfite pulp mill with no treatment.

The oyster business in that area was substantially injured in 1934 when this mill had a production of 90 tons per day. Anacortes then had a production of 61 tons per day or 151 tons total for both mills.

To solve the North Sound pollution problem, it will be necessary for both Bellingham and Anacortes to adopt the Weyerhaeuser or an equally efficient method of eliminating 80 percent of the sulfite waste liquor discharged. We respectfully suggest that the Washington pulp mills should be required to evaporate not 70 percent but 80 percent of the digester liquor as required by other sulfite pulp mills at Longview, Cosmopolis, Ketchikan, Sitka, and at least one pulp mill on the east coast.

We also respectfully submit that the Federal Water Pollution Control Administration must--capitalize and underline "must"--take over the enforcement of the report's recommendations set forth on Pages I to XXII. Otherwise we see no hope for the future solving of this pollution problem. We feel that the Federal Water Pollution Control Administration has a vital interest in solving this North Sound pollution problem and also in salvaging some returns from the million-and-a-half dollars spent in good faith to obtain the necessary scientific data for such action.

Sincerely, R. H. Bailey.

I want to make a couple more observations.

In the first place, in these comparisons of the fisheries in our streams, you know, I leased the Fisherman Packing Corporation, a nine-line cannery, in 1932. We operated an oyster cannery and hired 150 people in Everett, Washington, right between the two present pulp mills. And you know, the Snohomish River in early times was the greatest spawning stream in the State of Washington. I have often talked to Milo Moore about that. And the Skagit was a good spawning stream. It never equaled the Snohomish.

But you know, today we have a comparison of the Snohomish and the Skagit, and here is the Skagit blocked by four dams, I think it is, on the Skagit, a couple over on the Baker River, and the major portion of its spawning area has been eliminated. That might be mentioned in this ironclad comparison of why the Skagit, an unpolluted stream, is so poor and why the Snohomish is so good.

And secondly, I have great admiration for Mr. Stein and I like his approach that we should compromise the situation. You know, from my point of view, I go back to a time when I talked to the old timers in Skagit County way back in '22 and '23 who have got oysters from great reefs of native oysters in both Samish and Padilla Bay, the Indians brought in these Olympia type oysters. And then we came down, as I said in my statement, to the late 20's when these scattered oysters, Olympia oysters, disappeared.

And then after I had planted a half million dollars worth of seed oysters in Padilla and built the largest cannery in the United States for oysters, we woke up in late '34 and found out something was the matter. As you would open a bushel you are supposed to get a gallon of good oysters, sometimes as many as five quarts. To get a gallon you would have to open two or two and a half bushels. Commercially you are sunk; the mathematics of it, you don't have a chance.

We did continue to pack an oyster soup. We packed 3,000 cases a day of an oyster soup, sold it across the United States. The time came two years later when we couldn't even pack the oysters. They were worthless.

At the time we sued the mills in 1939, the pulp mills made their own pickup tests, how many oysters we got on these beds. It went to the measure of damages. They reported that we had something over a million two hundred thousand bushels. I sold oysters for transplant that should be worth $1.50 a bushel, I sold them for 10 cents net to me to finance our litigation. We spent $25,000. The mill--now, not Georgia-Pacific--the mill and the Puget Sound Pulp and Paper Industry Association spent $275,000 and bragged about it. They whipped the pants off of us. We had none of this information in this very comprehensive report.

There is no compromise with the evaporated 80 percent of this liquor. Otherwise, you are back where we were in '35 to '36. It has to go back down below the production of sulfite waste liquor in 1934. Otherwise you are just throwing your money away, the pulp mills' money away.

I do think that we should have automatic sampling outside of the dispersion zone to insure that at that point we have not to exceed 10 parts per million of sulfite waste liquor.

I want to thank you very much for this opportunity to just state my piece.

CHAIRMAN STEIN: Thank you.

Are there any comments or questions?

MR. HARRIS: I have no questions, Mr.

Chairman.

CHAIRMAN STEIN: Mr. Bailey, I just want to indicate, I don't think in my position and I don't think, speaking for the panel, in our position, since we have spent our professional lives in this business, that there is any question of compromise with clean water. What I am talking about is a question of the parties getting together and working out a reasonable operation, because, as I have said many, many times, and I would like to use the term generically about fish, you can't fudge these requirements, because if you fudge them the fish don't know it and they don't survive and they die.

MR. BAILEY: Right.

CHAIRMAN STEIN: You know, there was a time when I was in the service and we used to have to move fellows into the combat zones. For some reason or other they wanted them to qualify on the range. They would get the boys on the firing range, and seeing the great future ahead of them, some of them wouldn't do so well. We used to qualify a lot of them, as we said, by using the pencil. That might work there.

But I don't think in dealing with water quality it works in this field. Either we have a quality of water for specific uses or we don't. And if we don't and we have made the mistake, nature doesn't take account of what we do with our pencils; it is going to react accordingly.

MR. BAILEY: The thing that inspired my statement was some correspondence with Mr. Harris, who is a friend of mine. I have great regard for him. He is in a tough spot.

But you know, these publications set up the proposition that we reduce the biological oxygen demand down to--you eliminate 70 percent of it. The truth of it is that the/biochemical oxygen demand means nothing to the shellfish industry. It is satisfied within a half a mile or a mile. And if that were the measuring stick, why, we might just as well save our money and the pulp mills' money.

Thank you.

CHAIRMAN STEIN: Thank you.

At this point we will recess for lunch. Let's see if we can start promptly at 2 o'clock.

We stand recessed for lunch.

(NOON RECESS)

AFTERNOON SESSION, THURSDAY, SEPTEMBER 7, 1967

CHAIRMAN STEIN: May we reconvene?

Mr. Harris.

MR. HARRIS: We should like now to continue with the pulp and paper industry representatives who have signified their intention of presenting statements.

PULP AND PAPER INDUSTRY PRESENTATION
(CONTINUED)

MR. HARRIS: First on the list I have is Mr. Murl Miller, representing the Everett Technical Committee.

CHAIRMAN STEIN: Do you have any more copies of your statement?

MR. MILLER: Oh, yes. Would you like some?

MR. HARRIS: While the first gentleman is getting ready to present his statement, I would like to introduce one of our Commissioners, Mr. John Beggs.

John, would you stand up and be recognized? (Applause)

CHAIRMAN STEIN: John used to be a member of the Federal Water Pollution Control Advisory Board, and I guess one of my quasi bosses. We miss each other.

STATEMENT OF MURL MILLER
OF THE
EVERETT MILLS TECHNICAL COMMITTEE

MR. MILLER: Mr. Chairman and Conferees.

I am Murl Miller, Senior Process Engineer for Scott Paper Company, Everett, Washington. In this capacity I devote my time exclusively to the technical aspects of our operation related to water and air.

I am here today in the capacity of Chairman of the Everett Mills Technical Committee. This committee is composed of representatives of the technical staffs of Scott Paper Company, Simpson-Lee Paper Company and Weyerhaeuser Company's Kraft and Sulfite Mills in Everett. Its function is to provide a regular monitoring program of the local waters and conduct or sponsor research projects which characterize these waters and determine the effect, if any, of the discharge of pulping wastes upon the biota of the area.

Members of the Everett Mills Technical Committee have carefully examined the published results of the Federal-State study entitled "Pollutional Effects of Pulp and Paper Mill Wastes in Puget Sound, March 1967". In relation to the Everett area basic data collected in this work for the most part serves to reinforce our past and present contentions that the waters in general are in good condition and requirements of all users are essentially met.

The major portion of the two sulfite mills' waste load is discharged into Port Gardner Bay through a 3,000-foot deep-water diffuser line. The report says, Page 300:

"The Scott and Weyerhaueser mills have taken advantage of geomorphological and hydraulic features by disposing their strong pulping wastes at depth through a deep-water diffuser, and this means of disposal has proved quite effective. Accordingly, excessive pollution of the surface waters of the study area has been alleviated by transfer of this pollution to the deep waters."

The report further states, Page XIII:

"Review of presently available literature and considered judgment, however, have not produced any available evidence of damage or injury sustained by the marine life which populates the deep waters of the Everett area and which would be affected by the deep-water diffuser wastes."

We propose, then, to direct our attention to the two study areas considered by the report in which an attempt has been made to establish evidence of significant damage. These are:

1. The near surface waters, and
2. Sludge deposits.

For the surface waters, the Project has attempted to use the Pearl-Benson Index to establish correlations in biological tests without adequately recognizing its basic limitations. This has led to impractical recommendations that cannot be supported by requirements and values of the waters of concern. Statements already made by highly qualified people in this Conference are more than adequate to refute use of the Pearl-Benson Index as a parameter indicating deleterious conditions. The Project attempts to translate results from laboratory bioassays directly to the waterways, which is never a safe procedure when dealing with ecological concepts. We contend that the pragmatic approach of investigating nature itself is the surest way of establishing the existence or absence of a problem.

Following this approach, the Everett Mills Technical Committee has sponsored studies applicable to an evaluation of the various fisheries. One series of these studies has been conducted by the Fisheries Research Institute of the University of Washington. Dr. Salo of Fisheries Research Institute has previously described these studies for this Conference. These investigations were designed to describe migration patterns of juvenile salmon in the Everett area. Use is made by the Project of some of the data generated from these investigations conducted by Fisheries Research Institute. Essentially the Fisheries Research Institute, basing tentative conclusions on studies to date, describes successful migration patterns through waters of the Everett area. Further they conclude that the discharge of spent sulfite liquor into Everett Harbor, including Port Gardner Bay, has no appreciable effect on the Snohomish River salmon runs. Fisheries Research Institute, following good scientific practice, has reserved its final decision until studies using newly developed techniques of fish marking have been undertaken.

When the Project report and basic data are examined in detail, we find fundamental agreement that salmon migrations are successful in the broad reaches of waters adjacent to Everett. The Project's salmon bioassays, summarized on Page 319, show mortalities associated with Areas A and B. These areas are essentially the dock fronts of the Weyerhaeuser and Scott mills.

Further examination of the basic data indicates that mortalities were observed only in limited areas inside these zones. The significance of the mortalities reported for zones A and B is reduced when it is recognized that only limited conditions of tide and weather produced unsatisfactory conditions at the time of the bioassays.

These tests were conducted under conditions which are essentially of historical interest only. Subsequent to the tests, the Scott Paper Company has installed clarification facilities, effluent diffusers and connected sanitary sewers to the City sewage collection system. Weyerhaeuser Company has installed woodroom clarification facilities, connected sanitary sewers to the City system and has planned major outfall modifications in cooperation with the Washington State Water Pollution Control Commission. In addition, the City of Everett no longer discharges municipal wastes into this area.

Pursuing the concept of evaluation field conditions, the Technical Committee sponsored extensive studies by Dr. T. Saunders English on populations and the life cycle of the English sole. His work has produced significant discrepancies in findings with the Project's laboratory work. The Project has attempted to correlate Pearl-Benson positive material with toxicity to sole eggs and larvae. Dr. English's work clearly shows that any laboratory correlation they were able to produce is meaningless when translated to nature. Significantly higher levels of PBI than those recommended by the Project for the Everett area have been shown to have no effect on English sole, even when all stages of the life cycle are considered.

The extension of laboratory evaluations to implied harm to any other marine organism is at the most only a tenuous assumption. Thus the sweeping generalization of damage to, quote, ten species of sole, six species of cod, three species of clam, anchovy, herring, smelt and crabs, to mention a few of the more important, unquote, is not valid.

In addition to pursuing evaluations of field conditions, the Technical Committee has requested Mr. Charles Yentsch of Woods Hole Oceanographic Institution to review the Project's findings related to plankton. Mr. Yentsch has described for this Conference his conclusions as they differ from those reached by the Project report. His interpretation of the problems related to analysis of the planktonic data led him to the following conclusion: There is insufficient evidence that mill influence has a significant impact on estuarine conditions in the Everett area.

We would like now to direct our attention to those phases of the study concerned with the dock front areas, sludge deposits and primary treatment. We specifically are concerned first with the sweeping generalized recommendation that we quote from Page XV of the report as follows:

"Remove, by dredging, the existing accumulation of sludge in the Harbor and dispose of such material on land."

The mills of the Everett area have demonstrated their willingness to take corrective action when, due to requirements of the receiving waters,a need is established. With respect to the Everett Harbor area, conditions existed producing unfavorable results in the in situ bioassays at the time of the study. These conditions were limited to dock fronts and to small isolated pockets. These problems apparently related to bottom deposits existing at the time of the Project's studies and possibly to near-surface discharges of certain waste streams. While a contribution to these deposits is acknowledged by the report to be made by marine traffic, log rafting and the formerly existing estuarine municipal sewage outfalls, the Snohomish River load not attributable to pulp or paper mills is ignored. This load has been estimated from river flows and many years of data upstream from mill influence to exceed 30,000 tons per year of fine suspended combustible solids. This estimated load is exclusive of the heavy load of organic debris removed by fine traveling screens at the sample source. Data on sludge deposits covered in this report were, as previously indicated, obtained prior to the installation of clarification facilities by Scott Paper Company, prior to the installation of woodroom clarification by Weyerhaeuser Sulfite, and during the period when the City of Everett was discharging domestic wastes into Everett Harbor.

It is our opinion that the sludge problem in Everett Harbor which has had a deleterious effect only on waters immediately adjacent to the effluent discharge site under limited conditions of tide and weather has largely yielded to the previously described improvements and does not support application of sweeping generalized requirements.

Since the basic benthic studies of this report have been made obsolete by the changes described, Everett Mills Technical Committee is currently re-evaluating conditions in Everett Harbor in a study scheduled for completion this fall.

The second generalized requirement in the report quoted from pages XIV, XV and XVI is:

"Provide primary treatment of all solids-bearing wastes to provide for (a) removal of all settleable solids and (b) 70 percent removal of volatile suspended solids."

These are arbitrary requirements, not specifically related either to practicality in fact, feasibility, nor to specific mill conditions. Errors in assessment of loads generated by a mill or differences in their operating efficiencies or nature of product produced are important. 70 percent removal might be easily attainable in one mill, impossible in another. We believe that the criteria should be the demonstrated requirements of water quality in the receiving waters.

In summary, our examination of the Project report leads us to acknowledge that in extremely limited areas and under limited conditions of tide and weather, in situ tests produced juvenile salmon mortalities. We concur that these mortalities were probably due to sulfide generation from the shallow water sludge deposits. Our discussion has described changes which render the Project data obsolete.

We agree with the Project's findings that the deep-water diffuser is an effective method of waste disposal. We find the Project's attempts to demonstrate damage to marine life in the surface waters has relied basically on the oyster larvae and English sole egg and larvae bioassays. Field studies and expert testimony have established the fundamental errors in this approach. Hence the recommendations based on these techniques are by our analysis unwarranted.

We further find unwarranted the blanket application of primary treatment requirements without regard to the demonstrated needs of the receiving waters or the practical aspects of the individual mills.

We appreciate this opportunity to discuss our views with this Conference today.

Thank you.

CHAIRMAN STEIN: Are there any comments or questions?

MR. HARRIS: I have no question as of the moment.

MR. POSTON: None.

CHAIRMAN STEIN: Thank you very much, Mr. Miller.

Mr. Harris.

MR. HARRIS: The next pulp and paper industry representative will be Mr. Bob Thieme.

CHAIRMAN STEIN: Mr. Thieme, do you have

copies of your statement?

MR. THIEME: Right here.

STATEMENT OF ROBERT I. THIEME, VICE PRESIDENT
OF THE
SCOTT PAPER COMPANY

MR. THIEME: Mr. Chairman, Conferees, ladies and gentlemen.

I am Robert I. Thieme, Vice President of the Scott Paper Company and General Manager of its west coast division. It is my pleasure to accept Roy Harris's invitation to make a statement with respect to the report on the studies conducted by the Washington State Enforcement Project.

Before I continue with my paper, I had a couple of comments which perhaps properly could be made at this time, one in connection with Mr. Kari's presentation yesterday. He talked about the new mills who had made improvements in controlling water quality, specifically the Kimberly Clark Mill in California, the Weyerhaeuser Mill in Oregon, Kamloops Mill in British Columbia. For the record, I think it should show that these mills are kraft mills. Our problem is associated with sulfite mills.

In comments earlier today reference was made to the Penobscot River, the problems there with shellfish. It seems only proper that the record be made correct in that our information, from correct verbatim data from that meeting, is that the closures of the clam beds there were due to bacteria, not due to waste sulfite liquor.

CHAIRMAN STEIN: To continue with that, I am not sure that the scientists don't agree that bacteria are included in waste sulfite liquor. What you say is true.

MR. THIEME: Well, the only point, Mr. Chairman, was to sort of correct the record.

CHAIRMAN STEIN: Right.

MR. THIEME: And the inference was that it was all sulfite waste liquor problem.

There has been a lot of conversation about the toxicity of sulfite waste liquor, and with your indulgence I would like to make a little demonstration. I have in this container some waste sulfite liquor, a million parts per million (drinking it).

I would like to present this to Mr. Kari. You take it, for your examination. One million parts per million.

CHAIRMAN STEIN: The ghost of Vinton Bacon marches on. (Laughter)

MR. THIEME: First I would like to make two general comments on the report. One very important assumption on which the studies were conducted was that pulp and paper mill company wastes in general are polluting Puget Sound waters. We submit that this assumption is erroneous. It is our belief that the studies support our position that our effluents have not been shown to have a material adverse effect on water quality and marine life in the Puget Sound area. Nor do we believe that we are interfering with any other legitimate water use.

Second, there is a very important omission in the report which is of serious concern to our company. That is the absence of any discussion in the report of the economic aspects of the various water uses involved and the costs of implementation of the recommended requirements. This is somewhat surprising, since in the interim report of November 13, 1964, and also in your statement, Mr. Kari's statement presented on Page 5, the four interrelated elements of the study plan was stated to be as follows, and one of these:

"A program of economic studies to examine the values of the various uses of Puget Sound waters and to investigate the costs and financial impact incident to the mill's provision of treatment for their sulfite waste liquors."

This appears on Page 3 of that interim

report and, as I say, was reaffirmed in slightly different wording in the presentation made by Mr. Kari.

Even more important, however, is the lack of an analysis of the benefits to Puget Sound waters which can be expected from the enormous expenditures which would be necessary to meet the proposed requirements. In our considered opinion, the adoption of the measures recommended by the report would result in no significant change in the quality of Puget Sound waters. While there may be localized problems which can be alleviated, this can be accomplished without the adoption of the stringent requirements recommended by the report. We believe that the failure to discuss the cost-benefit relationship of the proposed recommendations is a serious shortcoming in the report.

Turning to our specific situation, I believe I would like to discuss a moment the procedures that were followed in connection with the Delaware River studies. I have a chart here which I think rather dramatically demonstrates what the situation is in terms of cost-benefit relationship. This is the result of a very extensive, sophisticated and detailed study in the Delaware River complex. You will find a copy of this attached to your report.

CHAIRMAN STEIN: Thank you. That will be included in the record.

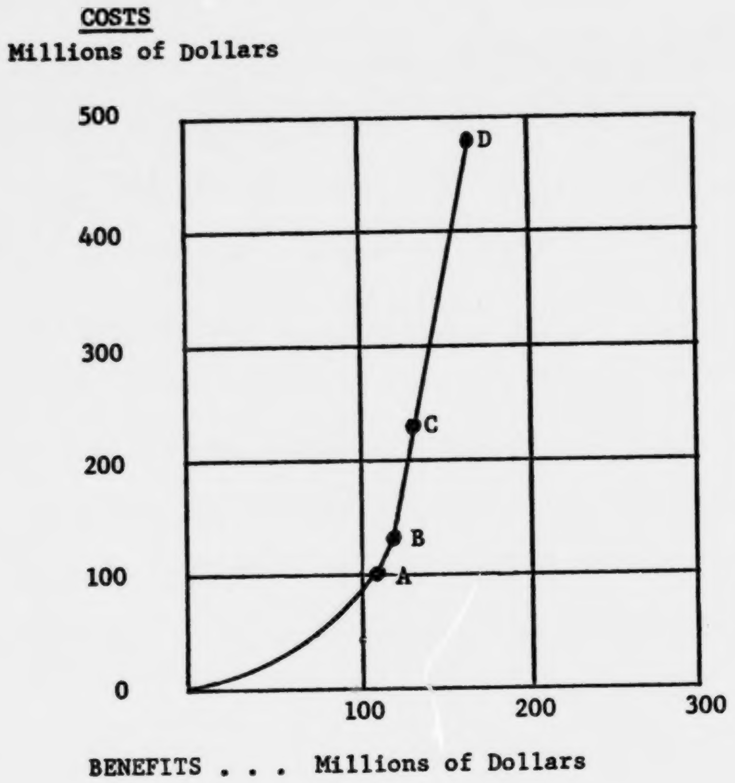
(The chart referred to follows on page 341a.)

MR. THIEME: Here we have a situation where a cost of a hundred million dollars produced benefits of a hundred fifteen million. The cost of a hundred thirty-five, up thirty-five million, the benefits improve only ten million. You go up another hundred million, the benefits only improve ten million, and you go up another two hundred fifty-five million and the benefits only improve twenty million. As shown on this curve, tremendous increases in cost, only incremental improvement in benefits. I submit that this is probably the kind of thing that must be developed and actually was a commitment of this whole project to be done.

Turning to our specific situation, Scott Paper Company has mills in two of the study areas, Anacortes and Everett. Our Anacortes mill, we constructed in 1952 a pipeline to carry spent sulfite liquor into Guemes Channel. This body of water is recognized by the report to be "nearly ideal for waste disposal", Page 231. The report states at this location our "mill wastes are so rapidly dispersed that they have a significant effect on water quality only in the vicinity of the discharge".

DELAWARE RIVER BASIN

Cost/Benefit Analysis



	COST	BENEFITS
A	$100.	$115.
B	$135.	$125.
C	$235.	$135.
D	$490.	$155.

Source - Prelim. Report & Findings
Page 66 - Table 16
Page 78 - Figure 45
Delaware Estuary Comprehensive Study

Except for samples taken immediately adjacent to the outfall, the report acknowledges that values of DO, pH and transparency in the area approach those of the ambient sea water.

In spite of this, the report recommends primary treatment for Anacortes mill, in addition to new pumping and diffusion equipment. In view of the excellent water quality conditions found in the Anacortes study, we question how this recommendation can be justified.

At our Everett mills, we have taken a number of steps to protect and improve water quality in the vicinity of our mills. Some of these steps have involved our manufacturing processes and others have involved methods of handling our effluents. Since 1947 we have spent about $2,500,000 on pollution control projects and we are currently spending almost $150,000 per year to operate water protection facilities and to maintain technical study and monitoring programs of both process and receiving water quality.

In 1951 Scott and Weyerhaeuser jointly constructed a deep-water diffuser pipeline, which has been mentioned before, whereby spent liquors from the two mills are discharged to the Bay at depths of 350 feet through a diffuser section. The report verifies that this means of disposal has proven quite effective, Page 300.

Within the past four years, we have substantially reduced the suspended solids discharged to Everett Harbor, Everett's inner harbor, by the installation of clarifiers in compliance with permits issued by the Washington Pollution Control Commission. The report states that the clarifiers have effected the reduction of about 60 percent in both total suspended solids and volatile suspended solids discharged into the Everett Harbor, Page 255.

In September 1963 we converted our method of discharge to the Everett Harbor of mill and bleach plant white waters from the surface outfall to a submerged dock front diffuser. The Everett study found that this changeover has had a beneficial effect in reducing foam problems, water murkiness and in speeding dilution of mill effluent, Page 290.

Our monitoring shows that improvement has resulted and is continuing in these inner harbor waters, and Mr. Miller spoke of this as a result of the Everett Technical Committee work. While these waters are not equal in all criteria to waters outside the initial waste dispersion zone, we cannot accept the report's outdated finding of detrimental effect on juvenile salmon o⁻ other marine life in the harbor. Most of the studies in the Everett area were made prior to the installation of our clarifiers and dock front diffuser and none are indicative of conditions as they exist today. For example, the study stating that depths of settleable solids have an adverse effect on juvenile salmon was conducted prior to our completion of the improvements which I have just mentioned. Certainly the requirement for additional facilities of, at best, marginal effectiveness would require further justification than has been presented.

For the reasons I have stated, and for the reasons contained in the statements made by the Northwest Pulp and Paper Association and the Everett Mills Technical Committee, we seriously question the validity and interpretation of the scientific studies in the report with respect to the effect of pulp and paper mill wastes on water quality and marine life in the Port Gardner Bay and Guemes Channel area. As a matter of fact, the natural abundance of Puget Sound and its recognized fertility are incompatible with the conclusion of the studies that pollution exists in this area.

And I would like to digress at this point, Mr. Chairman, to make reference to matters which were brought up in the Mount Vernon hearings, and which I understand are to be made of record, but I think are of importance at this point to shed light for the Conference on the situation that exists in Everett.

CHAIRMAN STEIN: Mount Vernon where, Mount Vernon, Washington?

MR. THIEME: Mount Vernon, Washington, yes, sir.

CHAIRMAN STEIN: Yes.

MR. THIEME: In connection with the fishery in Port Gardner Bay, you have heard expert testimony based on scientific studies. I think it is of importance to hear what the commercial fishermen and people involved in these activities said. This is a letter written by Mr. Frank Barcott, Jr.:

"I reside at 615 Wetmore Avenue, Everett, Washington. Since 1937 I have been engaged in the fishing industry, largely in and around the Everett area. I am now and have for the past 30 years been the owner and operator of the trawler LEMES, which during this time has made an average of five trips per week into these waters during the Puget Sound trawling season--that is October 15 to February 15 and April 15 to June 15--to catch various types of bottom fish, primarily English sole.

"Over the 30 years I have been active in fishing these areas, I have not observed any decrease in the quantity of fish available for us to catch here. In fact, I know that my own personal over-all catch has shown a pattern of increase in both numbers and weight of fish caught, a pattern which has been interrupted in only a few years. I believe that official statistics will show that the landings from all vessels engaged in the business of bottom fishing in these areas have steadily increased over the past decade or so, and I might add that there has never been a year in which the fish were more abundant than in the current season.

"I am happy to submit this statement to you for whatever help it may be in understanding the present water conditions in the areas where I fish and establish standards to govern the quality of these waters. Frank Barcott, Jr."

Now, I might add, we have speculated on the improvement of the fishery in the Everett Harbor, and I submit to you that there is a very real possibility that the nutrient value contained in this waste liquor which I just drank has conceivably been one of the supporting factors. There are sugars, there are organic materials. Conceivably these have enhanced the life cycle.

The next letter is from Vincent Barcott.

Briefly, he has the trawler Point Defiance.

"Over the past 30 years I have been particularly active in bottom fishing in the waters between Everett and Whidbey Island. I am out fishing there almost every day during the trawling season.

"It is my personal observation that the boats engaged in this type of fishing in this area have been bringing in each year, with only one or two exceptions, more fish than in the previous year. 1967 looks like it is going to be the best yet."

There was developed just a few years ago in Port Susan a new fishery in our area. This had to do with hake. The Federal report indicates that hake would be adversely affected by waste liquor. I have a letter from Mr. Zuanich:

"Gentlemen: My name is A. C. Zuanich and I would like to tell you about my recent experiences in catching hake from the waters along the east shore of Whidbey Island, particularly in Port Susan and Saratoga Passage.

"With my family, I operate the trawler Voyager, and in the past four months we have made almost daily trips into these waters to catch this type of fish by mid water trawling techniques. This fishery was started in 1965 and I understand that reported landings in the first 12 months were over six million pounds.

"We have been surprised and well pleased at our success. We have averaged about 40,000 pounds of fish for each trip we have made. We take these fish to Puget Sound By-products, Inc., where they are converted into fish meal.

"A lot of credit is due to the Federal Bureau of Commercial Fisheries, which did a lot of preliminary work in establishing the existence of this type of fishery in these waters. It appears to me that the numbers of fish available for mid water trawls will sustain a high level of catches indefinitely."

A similar statement from his brother Frank, who operates the trawler Wisconsin.

Excerpts from a publication, the National Fisherman, January 1967 issue. I just for a minute would like to read one small part.

"Between November 30, 1965, and April 6, 1966, the St. Michael"--which was the vessel originally employed in this fishery--"caught 2,564,000 pounds. The mid trawl gear had an average catch rate of 17,000 pounds per hour. The highest hourly catch rate was on trip No. 18, February 21, when the vessel took 104,000 pounds in three drags."

Another short excerpt:

"Available information suggested a school of hake in Saratoga Passage of about five to six million pounds. Bureau of Personnel estimated that the hake school in Port Susan during March 1966 was about 15 million pounds. After five million pounds had been taken, the vessels reported no noticeable reduction in the size of the school."

And finally a statement by Mr. Kenneth Tapert, who was the Secretary-Treasurer of the Puget Sound By-products, which was presented for the hearing of the Washington State Pollution Control Commission on Water Quality Standards at Mount Vernon, Washington, on February 9, 1967:

"Since 1948 we have rendered scrap fish for fish meal and fish oil. The boats that have been bottom fishing in the Everett area of Puget Sound have been our source of supply.

"Last year the U. S. Department of Fisheries developed and created a new commercial fishing operation for hake. In four months last spring two boats produced over two million pounds of hake for us. This year the same two boats have produced over one million pounds in five weeks.

"During the last several years various industries in the area have made concerted efforts and expended considerable amounts of money to control pollution. We believe this has immeasurably helped to preserve our fish resources."

That last sentence, "We believe this has immeasurably helped to preserve our fish resources."

These are all excerpts from the hearing at Mount Vernon.

Now, I have some pictures which I think the Conference should see. I think they will give you a better idea of what the situation is in the Everett Harbor.

Nick?

CHAIRMAN STEIN: Do you want these admitted for the record?

MR. THIEME: These pictures, with possibly one or two exceptions, are also exhibits contained in this report.

CHAIRMAN STEIN: All right.

I don't see any pictures in your report.

MR. THIEME: Well, it is not in my report. I am referring to the report of the hearing at Mount Vernon, sir.

CHAIRMAN STEIN: Oh, all right. Then you can refer to that. Thank you.

(The showing of slides was accompanied by the following commentary:)

MR. THIEME: This is a shot we mentioned, the clarification facilities being put into the Everett plant. This is a shot of the clarifier and the construction.

Next one. Here you see the clarifiers completed and in operation. This is primary treatment.

Next. One of the interesting things, it may be a little difficult to make out in this, but this is the waste bark from our barking operation, to which is added the concentrated sludge material which is collected by the clarifiers. If you look closely, you can see it riding along with the bark, then goes through a bark press and is burned in our boilers.

Next one. Here is a shot of the clear water coming out from the side of the clarifier, and you will notice the material being retained inside to your left.

Next shot. Here is one of our washers which reclaims material from our white waters.

Another save-all in operation, showing the kind of material we recover from the waters discharged.

ROBERT I. THIEME

Next one. Here we show some shots of the sampling in our monitoring program in Port Gardner Bay. This, as has been mentioned, is an active thing going on continuously and has been going on continuously since the late 30's.

Next shot. There is a picture of the sampling technique.

Next shot. Now, these are pictures which were taken by Mr. Leiter Hockett, and his report is also contained in this hearing from Mount Vernon. These pictures are taken at a depth of about 250 feet in the vicinity or right in the discharge area of our pipeline, and he found these fish swimming down there in that discharge area.

Next shot. Here you can see the healthy marine growth going on right on the pipeline in the discharge area. Those are sea anemones and there are fish in the background.

Here are some more sea anemones growing on the pipeline. Without projection, it is possible to see the actual discharge of liquor from the nozzles right next to these healthy sea animals.

Next shot. Here is a shot of the vessel which was rigged up to provide some of our special work in the bay. This happened to be rigged up for Dr. English's work to get bottom samples and make trawls and drags.

Next shot. Another shot of action on the vessel.

Next one. Sample being examined. I believe that is Tom.

Next shot. Here he is again.

Next one. Here are pictures taken of the fish from the bottom trawls in the bay.

Next one. Another shot of the fish which were taken.

Next one. Another shot of the bottom fish that were taken for examination.

Next one. This is a particularly interesting shot, particularly as compared to the comments which have been made in the report and other places. This shows a very active marine growth of barnacles and mussels on the piling underneath the dock of Weyerhaeuser Sulfite Mill.

Next shot. Here is a shot of crab being taken out in the flats off the jetty in Everett Harbor.

Next shot. And this is, in my opinion, a very interesting shot. All those people are standing around there catching herring. This is the 14th Street moorage in Everett Harbor. It is up in behind our inner harbor area. For about three weeks of the year the herring run in here and the people come down with bare hooks and gig for these herring and catch them in very large numbers. And incidentally, when we talk about the use of these waters for recreation, this particular boat moorage has something in the neighborhood of 800 moorings and has a long waiting list.

Is there another shot, Nick?

DR. LARDIERI: No; that is it.

MR. THIEME: Thank you very much.

Can we have the lights, please?

To continue with regard to the comment on recognized fertility of the Puget Sound waters, the report does not demonstrate that any appreciable gains would be realized by other water users or by the general public if the proposed recommendations were accepted. Therefore, we cannot agree with the conclusions and recommendations of the report.

So that our disagreement is not misconstrued, I want to reiterate that Scott Paper Company has long been committed to improvement of water quality where necessary and feasible. Our company has a formal water quality improvement program headed by Dr. Loren V. Forman, a vice president of the company. In addition, we support research of independent agencies and engage in research of our own, with a view of improving water quality at our mill sites. As technology and know-how develop, it is our intention to continually make improvements in our manufacturing processes and water quality control techniques. We accept this as one of the many obligations of a good corporate citizen. At the same time, we must recognize our corporate obligation to our employees and the community to preserve a successful competitive business enterprise.

We appreciate this opportunity to appear at this Conference and present our views. I firmly believe that the pulp and the paper industry has made significant improvements in water quality procedures in recent years and that the report demonstrates that our present use of Puget Sound waters does not interfere with the other uses being made of these waters.

I thank you.

CHAIRMAN STEIN: Are there any comments or questions?

Mr. Harris.

MR. HARRIS: One comment and one question.

I think, Mr. Thieme, you ought to drink some bourbon to wash that sulfite liquor down. (Laughter)

Secondly, referring to your chart on the back of the page as Exhibit A, what was finally selected, A, B, C or D, by the Delaware River Basin Commission as--

MR. THIEME: I will have to ask Dr. Lardieri. Which one was it?

DR. LARDIERI: C.

MR. THIEME: It was C, right.

MR. HARRIS: That shows a cost of 235 million versus benefits of 135, is that the one?

MR. THIEME: That is the one, yes.

MR. HARRIS: Thank you.

CHAIRMAN STEIN: Mr. Poston?

MR. POSTON: None.

CHAIRMAN STEIN: Thank you very much, Mr. Thieme.

MR. HARRIS: The next participant in this panel will be Mr. J. O. Julson.

STATEMENT OF J. O. JULSON, DIRECTOR,
AIR-WATER RESOURCES
WEYERHAEUSER COMPANY

MR. JULSON: Mr. Chairman, Conferees, ladies and gentlemen.

My statement will be short, inasmuch as I do not want to be repetitious of what has been given before.

My name is J. O. Julson, Director, Air Water Resources for Weyerhaeuser Company.

Weyerhaeuser Company operates three sawmills, a kraft pulp mill, and a sulfite pulp mill in and adjacent to the City of Everett, Washington.

Process effluents from the sawmills essentially are clarified waters from hydraulic barking. These clarified waters discharge into the Snohomish River with very little loading. Sanitary wastes from these mills are presently being treated in septic tanks, but these wastes will soon be pumped into the City of Everett's sanitary sewage system for treatment.

The kraft pulp mill discharges through two effluent streams; one which carries a small amount of fibre empties into the Snohomish River. The main effluent from this mill receives primary settlement treatment in lagoons, which discharge only on outgoing tides.

A significant reduction in the discharge of soluble solids has resulted from close monitoring practices and from a strong program of process water re-use. A further reduction in settleable solids discharge is expected when revisions to the lagoons are completed in 1968.

The sulfite mill discharges its main load through the deep water diffuser line used jointly by Scott and

Weyerhaeuser. The Puget Sound Report dated March 1967 recognizes the beneficial effect obtained in this method of waste disposal when it states on Page 383:

> "...the results of biological studies do not demonstrate that they presently cause any measurable damage to marine life inhabiting the deeper waters."

This mill discharges its other effluents through ports located in the dock face at the water's edge. A program of monitoring and re-use has resulted in a pickup of streams containing soluble solids and fibre. These are contained within the mill system.

A barker water screening and clarification system has substantially reduced solids formerly discharged into the upper surface waters adjacent to the dock. A refrigerated water chilling system has resulted in a marked capture of SO_2 which had formerly escaped both into the waters and into the atmosphere.

The concept of a second submerged outfall line has been under investigation with the Washington Pollution Control Commission, this line being suggested to take effluents into deeper water rather than discharge them near the surface and near the dock face. A comprehensive survey has been completed in this connection. The Washington Pollution Control Commission requested that final engineering design be held in abeyance until the objective could more clearly be defined.

The Weyerhaeuser Company wishes to make it clear that it supports statements made by others in this Conference who on behalf of the pulp industry contend that the waste loadings are not harmful to other uses and to other users of the waters of Puget Sound.

It is furthermore the position of Weyerhaeuser Company that benefits which may derive from the installation of facilities for recovery of spent sulfite liquors would be very small if measurable at all. The cost of such installations would be very great and there would be little if any commensurate improvement in water quality in return.

And here I would like to digress for just a moment and support the statement which you just heard from Mr. Thieme, of Scott Paper Company. We agree wholeheartedly with his reference to the economic problems.

On the other hand, Weyerhaeuser Company is not averse to installing abatement facilities when the need can be demonstrated and the expected results would be meaningful.

Mr. Chairman, we appreciate this opportunity to be heard today.

CHAIRMAN STEIN: Thank you, Mr. Julson.

Are there any comments or questions?

MR. HARRIS: I have one question, Mr. Julson, just for the sake of the record.

You indicate that sanitary wastes are being treated in septic tanks, and if I remember properly, a former statement indicated that wastes were connected to the City of Everett sewer system.

MR. JULSON: This is the other side of the city, Mr. Harris. The sulfite mill sewers are connected to the city sewer system. This is over on the lumber division or the sawmill side of the town.

MR. HARRIS: Very well. Thank you, sir.

CHAIRMAN STEIN: Any other questions?

MR. POSTON: No questions.

CHAIRMAN STEIN: Thank you very much, Mr. Julson.

Mr. Harris.

MR. HARRIS: The next participant will be Mr. John Dunkak.

STATEMENT OF JOHN H. DUNKAK
GENERAL MANAGER OF THE PUGET SOUND DIVISION
GEORGIA-PACIFIC CORPORATION

MR. DUNKAK: Mr. Chairman, Conferees,

ladies and geltlemen.

I am John Dunkak, General Manager of the Puget Sound Division of Georgia-Pacific Corporation, located in Bellingham, Washington.

CHAIRMAN STEIN: Pardon me. Do you have a copy of your statement?

MR. DUNKAK: I do not, sir.

CHAIRMAN STEIN: Do you have one for the reporter?

MR. DUNKAK: I will have to revise one and submit it later.

CHAIRMAN STEIN: That is all right.

MR. DUNKAK: I will talk slowly and clearly.

We have read the report of the Federal Water Pollution Control Administration dated March 1967 relative to Puget Sound waters. It certainly represents the expenditure of considerable efforts and funds and does add to the mass of data now available. While the report contains important contributions, it merely supplements the more extensive work of previous investigators. It is regrettable that this previous research was not given due consideration. We cannot agree, consequently, with several of the significant conclusions and recommendations presented in the report.

While the March 1967 report cites the work of the FWPCA investigators, it surprisingly omits and conveniently ignores some of the conclusions reached by those investigators. Furthermore, the only allusion to adult oyster mortality, growth or condition contained in the FWPCA statement presented at this Conference, which appears on Page 18, is contradicted by the FWPCA expert who analyzed the raw data. I quote the conclusions from Page 10 of Dr. Paulik's report (1966 E):

"Conclusions. On the basis of data and analyses reported herein, it is not possible to make any definite statement about the effect of the station location upon the mortality of a population of adult oysters held at a given station."

Thus serious doubt is cast on the conclusions contained in the March report relating oyster mortality to distance from mill location.

Furthermore, data presented on Page 127 of the March report shows that the greatest growth of juvenile oysters occurred at Station B, close to the mill.

Again quoting from Page 6 of Dr. Paulik's report (1966 C):

"It is necessary to conclude that the growth study data do not provide a valid means of measuring the effect of pollution on juvenile oysters."

Now, with respect to oyster condition, it is interesting to note that Dr. Paulik's report (1966 D) recognizes on Page 1:

"It is well known that condition factors vary with environmental conditions. A detailed analysis of differences in environmental conditions between these stations will follow in a later report."

To our best knowledge, to date this so-called later report has not be submitted. How then, we ask, were the conclusions on condition factor arrived at?

During the past 11 years we have conducted and sponsored exhaustive studies of Bellingham-Samish Bays. These continuing studies carried out by our own staff, by independent investigators, and by various departments of the University of Washington, were undertaken to determine the effects of our discharges on the receiving waters. Georgia-Pacific Corporation has expended approximately a million dollars on these investigations, which for the most part have not been utilized by the report.

You may be sure that we have not undertaken this major research effort to delude ourselves. We believe we have determined the water conditions of Bellingham and Samish Bays and are convinced that our operation produces no significant adverse effects on the marine life of the area.

Today we recover and produce annually about four million gallons of industrial alcohol and in excess of 50,000 tons of lignin chemicals from our waste materials. This represents a total removal and economic use of approximately 95,000 tons of solids which would otherwise have been discharged into our receiving waters. As a result of our waste utilization through our by-product research and development program, the waste equivalent of our 500-ton pulp mill has been reduced by about 50 percent as measured by total solids discharged or the biological oxygen demand of the effluent.

If continued improvement and expansion in the utilization of our waste material is to be achieved, we must continue to expend large sums for basic research. However, such heavy research expenditures cannot be justified or undertaken if we are forced to implement systems for waste disposal which are not compatible with continued by-product production.

In conclusion, it is our considered judgment that an unbiased scientific evaluation of all the data on the waters under consideration, including data of the FWPCA, of independent investigators and of our own staff does not justify all the recommendations as set forth in the March '67 report.

Thank you, gentlemen.

CHAIRMAN STEIN: Do you have any comments or questions?

MR. HARRIS: Mr. Dunkak, did I hear you correctly say that you could not justify any waste treatment facilities that cannot be utilized for by-products recovery? I perhaps misunderstand.

MR. DUNKAK: No, Mr. Harris, I think what I said was that we have a heavy investment in research now, and referring specifically to the spent liquor on which this research is expended, we cannot go to a system that will force a recovery of the liquor and still maintain a research for development production. The two are not compatible with each other.

MR. HARRIS: Thank you.

CHAIRMAN STEIN: I thought about saving this until the end, but I think it would be fair this way, possibly. In Mr. Benson's statement he said:

"In certain cases substantial improvements of inner bay water quality may be achieved either by the removal of settleable solids or better outfall locations at costs much more commensurate with expected results."

When I asked him about this he said the mills would comment. We have had several now. Except for Weyerhaeuser, which is talking about an improved lagooning operation and a diffuser outfall, the other mills, this might read "in certain cases substantial improvements of inner bay water have been achieved", because I have heard no new projects and I didn't hear one from you. Rather than--and this goes to the rest--rather than wait until the end, if this is the case, that only Weyerhaeuser is suggesting an improvement, I think the record should indicate this.

And the next point and last one, maybe you can get both of these together, you said some of the Federal report conclusions should not be accepted. Do you think any should be that relate to action?

MR. DUNKAK: Yes, I think there are some legitimate recommendations.

CHAIRMAN STEIN: Such as what?

MR. DUNKAK: And you are talking about primary treatment, trying to answer both together here, Mr. Chairman.

CHAIRMAN STEIN: Yes. I think they fit.

MR. DUNKAK: Our treatment under our present waste discharge permit, we were instructed to install settling facilities for our woodroom effluent. We had submitted plans to the State for this, and because of the new law, the new emphasis on pollution, at the request of the State these plans were delayed until such time as the whole picture could be reviewed. We are sitting in that position at the present time.

CHAIRMAN STEIN: Yes. But you know, what I think we are trying to do is create a record here, and I don't want to put it this way, that you are doing yourself a disservice, but I think we are doing the record a disservice, in a sense, by not outlining for the mills what you have proposed to do. In other words, if anyone would read the record or read the colloquy, if we didn't take this up, they may get the notion that your mills at Bellingham aren't proposing to do anything.

As far as you are concerned, you are ready to go ahead with primary treatment for at least a certain portion of the plant?

MR. DUNKAK: We recognize the need for a certain degree of primary treatment and expect to be negotiating the extent of this need with the State in November, yes, sir.

CHAIRMAN STEIN: May I say this to you and the other mills that come up, I think this would be helpful.

And I think this is just for the point of the record on both sides, I think Weyerhaeuser has done this, if this could be indicated by the mills that are in favor of certain proposals so we would recognize the facts of the situation and not be farther apart than anyone has to be.

Thank you very much for your statement, sir.

MR. HARRIS: The next participant to be called will be Mr. Ed Cavanaugh, representing Fibreboard at Port Angeles.

STATEMENT OF E. J. CAVANAUGH
OF THE
FIBREBOARD CORPORATION

MR. CAVANAUGH: Mr. Chairman, Conferees and ladies and gentlemen.

My name is E. J. Cavanaugh. I am Plant Manager of Fibreboard Corporation in Port Angeles, Washington.

First we would like to state that we concur with the statements made yesterday by Don Benson, Executive Secretary of the Northwest Pulp and Paper Association, of which we are a member.

Based on a study made by Brown and Caldwell, a consulting firm of sanitary engineers, in 1961 of offshore water conditions at our Port Angeles plant, we find no justification to the requirements for removal of sludge bed and the installation of discharge line 50 feet below the surface of the water.

To substantiate the above statement, we would like to read a copy of Brown and Caldwell's letter of September 1 dealing with the subject.

"Waste disposal, Port Angeles mill.

"As you requested, we have reviewed reports and other data collected in the course of our oceanographic investigations of conditions in Port Angeles Harbor and are submitting herewith a summary of those observations.

"During December 1961 our firm conducted an underwater investigation in the harbor offshore from the Port Angeles mill to determine the extent of deposition and the apparent effects on marine life in the vicinity. Personnel involved in the work were sanitary engineers, one of whom was a scuba diver, a biological oceanographer, and professional scuba divers. The underwater work was carried out for a total of seven days and also included inspection of areas in both Port Angeles Harbor and at Neah Bay, 75 miles westward, where conditions were unaffected by pulp mill discharges. Underwater photographs were taken and detailed field notes were kept.

E. J. CAVANAUGH

"Effects of Solids Deposition.

"The deposition area attributable to waste water discharge from the Fibreboard mill covers an area of about 115 acres and, in general, was found to occupy a segment of a circle with a radius of about 2,500 feet lying northerly and easterly of the mill. This area amounts to about 3.4 percent of the area of the bottom of the Port Angeles Harbor as a whole.

"Bottom deposits in general did not exceed 24 inches in depth. At the outer edges the deposition feathers out to a band or strip of isolated clumps of fibrous material. This strip ranges in width from a few feet to several hundred feet. Inspection indicated that a condition of general equilibrium existed between the depth and extent of the deposited material and the bottom currents.

"Observations by divers in the deposition area revealed an abundance of marine animals living on and immediately above the deposits. Those noted include spider crab, anemone, limpet, starfish, shrimp, sculpin and flounder. Existence of these creatures is indicative of aerobic conditions on the surface of the deposit.

"Except for a shallow surface layer, the water overlying the deposition area was found to be quite clear and schools of several different species of fish and other animals were observed. These included Pacific herring, yellowtail rockfish, Pacific staghorn sculpin, starry flounder, shrimp, krill, spider crab, hermit crab, starfish, anemone, nudibranches and octopus. Local divers, in addition, reported the presence of lingcod, marbled sculpin and black rockfish. On several occasions sports fishermen were observed catching salmon adjacent to the Fibreboard dock which is located in the deposition area.

"Observations of the marine biota on and in the immediate vicinity of dock pilings revealed a profusion of biological activity. Inhabitants included acorn barnacles, sponges, anemones, nudibranches, sea urchins, chiton, jingles, keyhole limpets, tubeworms, starfish and spider crabs.

"Comparison dives were made at Neah Bay and the Thunderbird Boathouse just inside Ediz Hook at Port Angeles. At Neah Bay pilings exhibited a more abundant growth of tubeworms and mussels, but not as heavy a growth of anemones and sponges as found on the Fibreboard dock pilings. Growth on pilings at Thunderbird Boathouse was found to be quite similar to that at the Fibreboard dock. Little or no differences in the variety of fish were noted between the three areas.

E. J. CAVANAUGH

"These studies demonstrate quite dramatically that a well balanced marine community exists on and over the area of deposition offshore from the Fibreboard mill. As a result, we have concluded that the marine environment has not been adversely affected by deposition from the waste discharge. Under these conditions mechanical removal would not improve the bottom environment and could cause adverse conditions during the extended period which would be required for such an operation.

"Effects of Proposed Submarine Discharge.

"Because its density is much less than that of seawater, waste water discharges at or near the surface form a relatively thin layer. During the 1961 study it was found that clear underlying seawater was brought to the surface by a small boat's propeller. Such a surface is exposed to wind and wave action and, therefore, tends to disperse quite rapidly. The immediate oxygen demand of the waste is met by surface reaeration and by dilution in the surface waters.

"Accordingly, it has a negligible effect on dissolved oxygen levels in the great mass of underlying seawater. This conclusion is attested to by the observation of marine life reported in the preceding paragraphs.

"The question arises as to the relative merits of a deep water discharge into the harbor. By discharging through a multiple-port diffuser it is possible to obtain rapid initial mixing, possibly as high as 60 parts of seawater to one part of waste water. The mixture, however, will form a relatively thick surface field which will have a lesser tendency to remain on the surface. Thus a higher concentration of sulfite waste liquor would exist in the underlying waters. As a result,a greater depression of dissolved oxygen levels would be expected than with a surface discharge.

"Normally it is considered desirable in municipal waste disposal practice to provide for as deep a discharge and as great a degree of mixing with underlying waters as possible. In the present case, however, it appears that so doing could well cause adverse effects on the marine environment which do not exist with a surface discharge. For these reasons we cannot concur in an arbitrary requirement with respect to the depth of the discharge. We recommend that such a decision be based on results of a study of the dispersion characteristics and tidal currents, both surface and deep, in the vicinity of the discharge.

"We trust this summary will meet your needs at the forthcoming hearing. Please call if any questions arise."

Signed by Brown and Caldwell or signed Brown and Caldwell by D. A. Reinsch.

CHAIRMAN STEIN: Are there any comments or questions?

MR. HARRIS: I don't think I have any comments to make at this time. Thank you.

CHAIRMAN STEIN: I am just going to do this for clarification.

As I understand it, the report, both of the State and the Federal people, recommended three things on Fibreboard:

One is to provide primary treatment.

Second is to construct an outfall. Now, the Federal people said submarine outfall, the State people talked about an outfall to have the maximum diffusion, and as I understand your statement you are not very far, if any, apart from the State.

And the third is to remove by dredging existing accumulations.

You are against the submarine outfall, at least your consultants, and dredging the accumulation. How do you stand on primary treatment?

MR. CAVANAUGH: We have that under consideration now, sir, and we are in the process of working on connecting with the city on sanitary sewers. We have installed years ago, which has been reported to the State, a collection of waste discharges and screens and centri cleaner, which collect this material that formerly went out into the harbor and is now hauled out to a dump.

CHAIRMAN STEIN: I think both the State and the Federal people recommend primary treatment of all solids-bearing wastes.

MR. CAVANAUGH: We have that under consideration, sir.

CHAIRMAN STEIN: What do you do with your human waste now from the plant?

MR. CAVANAUGH: That is what I say, just as soon as the city--

CHAIRMAN STEIN: But there are two things, I think.

What I am trying to do is get information for the record. These are not the probing kinds of questions.

What I would like to find out is what you are doing with the waste from the people who work in the plant and what you do with your other solids-bearing wastes in the plant or what you intend to do.

MR. CAVANAUGH: Well, with the solids from the people working in the plant we are doing the same right now as the City of Port Angeles is doing.

CHAIRMAN STEIN: You mean you dump it?

MR. CAVANAUGH: Yes. However, the City of Port Angeles is in the process of putting in a complete sewer system and we are working on tying in with them for our sanitary sewage.

CHAIRMAN STEIN: How about your other solids-bearing wastes?

MR. CAVANAUGH: The other solids, we have under consideration some sort of a settling on those, plus the fact that we have already put in screens and Centri cleaners and other means of collecting what we can.

CHAIRMAN STEIN: All right. Thank you.

Are there any further questions or comments?

Thank you very much, Mr. Cavanaugh.

MR. HARRIS: Next will be Mr. Roger Tollefson, representing Rayonier Corporation.

STATEMENT OF ROGER TOLLEFSON
RESEARCH SUPERVISOR, OLYMPIC RESEARCH DIVISION
RAYONIER INCORPORATED

MR. TOLLEFSON: Mr. Chairman, gentlemen.

My name is Roger Tollefson. I am Research

Supervisor for the Olympic Research Division of Rayonier, Inc., at Shelton, Washington, on matters of receiving water quality. I am appearing today on behalf of the Port Angeles Division of Rayonier.

It has been noted in this Conference that Rayonier operates a sulfite pulp mill at Port Angeles and discharges process wastes into the waters of that harbor. This is correct.

It has been noted that the Federal Water Pollution Control Administration conducted certain limited studies in this harbor in the course of a four-year period from 1962 into 1966, as presented in the report under discussion here today.

In reading this Federal report, and in the course of the proceedings of this Conference, we have read and heard the contentions of, "serious water quality degradation, probable damage", and so forth, with which contentions we cannot agree. These contentions are refuted by the results of all other studies that have been made of the area, which studies have consistently shown extremely abundant marine life within Port Angeles Harbor. We have studied and analyzed this Federal report and the data offered in support of it in an attempt to reconcile these contradictions. No such reconciliation is possible.

The findings contradictory to the report have been presented through various scientific meetings and papers. Rayonier and others have presented them in considerable detail to the State Pollution Control Commission in the hearings on water quality and standards this past year.

Copies of the most pertinent of these reports, namely "Port Angeles Water Quality Monitoring Program" by Stein and Denison, December 1, 1966; "Statement to Public Hearing, Port Angeles, Washington", by John B. Gray, December 15, 1966; "Industry Statement to Public Hearing, Port Angeles, Washington", by Storrs Waterman, December 15, 1966, are herewith submitted as a part of the legal record of this Conference.

CHAIRMAN STEIN: Without objection, they will be made an exhibit.

MR. TOLLEFSON: Thank you.

(The report entitled "Port Angeles Water Quality Monitoring Program" is marked Exhibit 7 and is on file at the FWPCA Headquarters in Washington, D.C., with copies on file at the FWPCA Regional Office in Portland, Oregon, and the State of Washington WPCC office in Olympia, Washington.)

(The other two reports referred to follow:)

"STATEMENT BY JOHN B. GRAY

"Statement to Public Hearing, Port Angeles,

STATEMENT BY JOHN B. GRAY

Washington, Regarding Proposed Water Quality Standards for Coastal waters from the mouth of the Hoh River to Tatoosh Island and Strait of Juan de Fuca from Tatoosh Island to a line between Fort Casey and Fort Flagler State Parks.

"December 15, 1966.

"Mr. Chairman: I am John B. Gray, Manager of the Port Angeles Division of Rayonier Incorporated. My company has been operating a sulphite process pulp mill in Port Angeles since 1930. During this period, our mill has been a major factor to the economy of this area and currently employs 465 persons with an annual payroll of $3,600,000.

"Rayonier believes that waste management is a public and industrial responsibility that should have as its objectives maximizing the multiple use of water resources and maintaining health standards in the atmospheric environment. For its part, the company is committed to a continuing effort to control and improve air and water quality affected by our operations. In this context we believe that water quality control standards must be established that give proper recognition to the traditional function of waste assimilation as a legitimate, beneficial use of water; that are within the reach of industrial technology; and are within economically permissible limits.

STATEMENT BY JOHN B. GRAY

"As a part of its water quality control program Rayonier operates a Marine Laboratory at Hoodsport, Washington. The program at the laboratory includes a complete biological and chemical evaluation of the aquatic environments of all Rayonier mills. The data are collated statistically by means of a computer, and used as the basis for control of disposal practices. The results are closely tied to manufacturing and engineering decisions affecting mill wastes.

"The water quality control program at each mill is under the direction of a graduate engineer. Each mill program also has the benefit of regular review by the Marine Laboratory staff and expert consultants.

"Since 1960, pollution control and abatement equipment and facilities accounted for 25 percent of the total expenditures in Rayonier's United States manufacturing and research divisions. Approximately ninety percent of this amount was for water pollution control. The total of capital costs and operating costs for pollution control and abatement during the past six years was over $14,000,000. More than $10,500,000 of this was spent in the State of Washington.

"Since 1961, we have routinely maintained a thorough program of monitoring the waters of Port Angeles

Harbor and surrounding area influenced by our mill effluent discharge. During this period our Technical Department has devoted over 1,460 man-hours in the collection and analysis of water and effluent samples. In addition, our Marine Laboratory has spent some 8,720 man-hours intensively surveying bottom conditions and sludge bed deposits in the harbor; inventorying the various marine animals and organisms living in the harbor; studying the conditions of these animals and organisms through bio-assays and other analytical methods; and in making extensive studies of the water currents and other relevant phenomena prevalent in Port Angeles Harbor and the adjacent waters of the Strait of Juan de Fuca.

" Using these data we have carefully considered the proposed water quality standards for this area. My remarks are intended as a summary of our evaluation and conclusions regarding these proposals as they relate specifically to the Port Angeles area. These data were developed from field surveys made over the last five years and the findings and conclusions derived therefrom are contained in a report filed herewith. This report may be the only reliable scientific literature on the subject of Port Angeles water quality standards.

" On the basis of this and other data available to us, we offer the following comments for your consideration:

STATEMENT BY JOHN B. GRAY

"1. Most of the wastes are confined to the upper water layers of the south shore of the harbor.

"2. From the distribution of oxygen, it is concluded that only a small proportion of the assimilative capacity of the harbor is used and this use is confined to the immediate vicinity of the mill. The mill's effluent comprises only 0.065% of the available dilution volume of 54 billion gallons.

"3. Currents at the end of the Rayonier dock run in an east by northeast direction; consequently little, if any, waste from Rayonier's effluents gets into the westerly portion of the harbor. The flushing action is so rapid that in 5 to 6 hours over 95% of the effluent leaves the harbor.

"4. The presence of a wide variety of organisms, including the plankton feeders, attest to the adequacy of the food chain within the harbor.

"5. The large numbers of fish and diversity of vertebrate and invertebrate organisms attest to the excellent water quality of the harbor.

"6. The maintenance of the steelhead run in Ennis Creek, the mouth of which is only 50 yards from the mill's outfall, demonstrates that the mill's discharge does not prevent the passage of upstream and downstream migrants. This also suggests that other incidental salmonids in the area would not suffer any deleterious effect.

"7. The fiber deposits have stabilized as to area, depth and organic content. The oxygen content of the water in the area of the deposits compares favorably with the bottom waters of the Strait of Juan de Fuca.

"8. It is not realistic or appropriate to attempt to apply a single classification or identical standards to all the waters under consideration at this hearing. Nor are all the uses listed necessarily common uses to all these waters.

"Table 1 on Page 13 of the Information Bulletin lists the same four present proposed uses for all the waters from the mouth of the Hoh River to Marrowstone Point: (1) Bathing, Swimming and Recreation; (2) Growth and Propagation of Fish and Other Aquatic Life; (3) Shellfish growth and propagation; and (4) Industrial Water Supply. This lumps together under a single set of criteria widely divergent and varying biological communities requiring different chemical and physical environments. It treats as one and the same open beach environments, inland waters, bays and estuaries. It fails to differentiate between areas used primarily for recreation and areas where recreational use is negligible but where the existence and vitality of the

STATEMENT BY JOHN B. GRAY

community is almost entirely dependent upon thriving wood products industries. We do not believe that realistic and appropriate water quality standards can be achieved with such a generalized and arbitrary approach.

"9. As applied to the Port Angeles area, the list of uses both present and proposed does not adequately recognize the economy of the area. We call your attention to the ommission as present and proposed uses of several historic water uses of vital importance to the economy of the Port Angeles area; namely, log booming, storage and movement; navigation; and waste assimilation. Port Angeles is a thriving community because of the forest products industries here. It is adjacent to extensive forest resources and it is located on the edge of a vast body of tidal salt water with a tremendous waste assimilative capacity. 70 to 80% of the people in Clallam County depend primarily or secondarily on the forest products industries.

"10. We question the inclusion of swimming, bathing and shellfish culture as legitimate present and proposed uses of the waters in the Port Angeles area. Bathing and swimming in the conventional sense are not feasible because the water is too cold, generally around 50° F. 45 minutes is regarded as the average survival time in these waters. We know of no significant shellfish population in or adjacent to the Port Angeles area. Competent scientists tell us that the propagation of commercial species of oysters is not feasible in water temperatures encountered in this area. The absence of extensive tidal flats also makes this area unsuited for oyster culture.

"11. Although we are not aware of any present use of the salt waters under consideration for industrial water supply, a possible future use for industrial cooling purposes does exist. We know of no evidence to indicate that existing water quality would in any manner adversely affect such use.

"12. As to the growth and propagation of fish and other aquatic life, we are unaware of any evidence that indicates this use suffers any adverse effect under present conditions. The extensive research data available to us certainly does not support any such assumption.

"13. The recreational uses of the local waters have been significantly developed. There is extensive boating and the waters both inside and outside the harbor are internationally famous for the sport fishing and skin diving opportunities they offer. None of these uses has been impaired by industrial waste discharge.

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"For these various reasons, we can find no evidence that the operation of Rayonier's mill adversely affects any of the present or feasible proposed uses for the waters in and adjacent to Port Angeles Harbor. Consequently, we do not feel that adequate justification exists for the "Tentative Future Waste Treatment or Control Needs," indicated on Page 23 of the Information Bulletin, for the Rayonier Port Angeles Division. Such facilities would require a large investment and continuing operating expenses, but they would not add any new use for the waters or enhance any existing use.

" As I indicated earlier, we have demonstrated our willingness to make large investments to protect water quality whenever there is a demonstrated need. Commencing several years ago, we have invested over $8,000,000 in a recovery plant at our Grays Harbor Division in Hoquiam. However, the situations there and here are entirely different. The Hoquiam plant is located on the Chehalis River Estuary which has limited waste assimilative capacity. During low-flow periods of the river, dissolved oxygen frequently reached marginal levels. To assist in safeguarding the important fish passage capability of the lower river, Rayonier built the recovery plant to destroy spent sulphite liquor wastes from the mill. The great waste assimilative capacity of the waters in the Port Angeles area preclude a similar problem here.

"We welcome the opportunity to appear at this hearing and express our views. We appreciate the obligation the State has to establish water quality standards and the enormity of the task. Rayonier fully supports the establishment of equitable and meaningful standards for the waters of the State. We hope our comments and the data which we are submitting will be useful in accomplishing this purpose."

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"STATEMENT BY STORRS WATERMAN

"Industry statement to Public Hearing, Port Angeles, Washington, Regarding Water Quality Standards for Coastal Waters from the mouth of the Hoh to Tatoosh Island and the Straits of Juan de Fuca from Tatoosh Island to a line between Fort Casey and Fort Flagler State Park.

"December 15, 1966

"My name is Storrs Waterman. I am Chief Chemist of Industrial Chemicals Division - West, Pennsalt Chemicals Corporation, and am chairman of the air and water Pollution Control Committee of the Chemical Industry Council of the Pacific Northwest.

"I am also a member of the group of technical people commissioned by the Natural Resources Committee of AWI previously described by Mr. Graunke.

"My statement today will review the Information Bulletin prepared for this hearing by the Pollution Control Commission.

"We generally support with two provisions hereinafter noted, the existing water quality standards as previously adopted by the Commission and as quoted on Pages 8 and 9 of the Information Bulletin. The first provision is that the interpretation of deleterious effect on "related forms of aquatic life" does not preclude any change in an array of aquatic organisms. Our contention is that as long as the species of aquatic life that is important to man for example, the fishes, is in satisfactory condition, variations in the make-up of the food web of aquatic life leading to such a satisfactory condition is not of primary importance. The Appendix "A" attached describes this concept in more detail.

"Our second provision is that these standards should also recognize that less than 5mg/L oxygen may satisfactorily serve the full usefulness of certain zones of the sound and coastal waters.

"Reference is made to the foldout sheet of the Information Brochure which is between Pages 10 and 11 and contains a table of water uses and limitation of parameters to protect such uses. This table is a useful guide when approaching an overall water quality standard, but choices must be made when conflicting uses or natural conditions do not permit the idealized condition indicated by the chart to prevail. Reasonable departure from the ideal will allow satisfactory multiple use of the water. A number of terms in the chart need to be more adequately defined and several present a quandary for implementation for instance, when natural conditions do not satisfy the standards proposed.

"A review of Table I listing water uses for the waters in question both future and present, fails to reveal any definite reference to the legitimate use of water to receive effluents from industrial operations or municipal treatment works even though such a use is implied by the setting of certain of the standards. As technology progresses there is a continually increasing effort being made to re-use water. This is possible because of advanced methods of treatment which not only make re-use more practical but also put waste water into better condition for disposal. It is expected that this approach will continue to grow and more and more industrial and municipal waste water will be re-used. However at present it is not practical to

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have closed water cycles in most instances and there must continue to be disposal of industrial and municipal wastes into public waters. Consequently, it is respectfully requested that disposal of domestic, municipal, industrial and agricultural wastes be included both present and future in Table I.

"The use of these waters for transportation has been omitted and should also be included in the final listing.

"In reviewing the legitimate uses of the water under consideration today it must be emphasized that not all of the water is used for all of the purposes listed all of the time. For this reason it is suggested that, where applicable, the areas for several of the uses be more specifically delineated for time and place.

"The following remarks are made in reference to the Tentative Limiting Water Quality Standards for both general waters and shellfish growth and propagation areas as listed on Pages 14 through 17. We discuss most the items listed, but there are several as to which we offer no comment at this time.

"1. We support the use of the measurement for organisms of the coliform group where they are specifically associated with fecal sources. To be more certain of this

STATEMENT BY STORRS WATERMAN

principle however we suggest the addition of the words "of human origin" in the qualifying statement.

" 2. We suggest that dissolved oxygen be expressed in terms of milligrams per liter rather than percent saturation as proposed.

"It is recognized that fish and aquatic life need oxygen in terms of absolute quantities rather than the % saturation value which are dependent upon salinity, pressure and temperature. Since the percent saturation is dependent upon the three variables mentioned, absolute values as expressed in mg/L are easier to administer.

"We recommend that the measurement of oxygen be made from the surface to the thermocline or halocline. In the absence of either of these delineations a maximum depth of thirty (30) feet is suggested. An average of multiple vertical samples should be made for determining the oxygen levels of this water mass.

"We find no bases for the levels of oxygen selected for shellfish growth and propagation. For example, oysters do not need these levels of oxygen since they can be stored for a considerable time out of water altogether. To our knowledge there have been no recorded mortalities of oysters due to oxygen deficiencies. The normal habitat of commercial mollusks is at the mud-water interface where

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oxygen values are traditionally and naturally low. To the best of our knowledge the subject of oxygen requirements for mollusks has not been considered an important area for investigation because of the above observations which show that oxygen has not been a problem.

"Except for the special case of razor clam propagation on the outer coast line, other water uses in areas of shellfish propagation will necessitate a higher level of oxygen than that required by mollusks.

"In the proposed criteria described by Mr. Graunke we submit in more constructive detail our recommendation for the various levels of oxygen required for fish and wildlife propagation.

"3. For general waters we consider that a range of pH from 6.0 to 9.0 to be satisfactory for all uses indicated. The induced variation due to a discharge must be measured after a reasonable degree of effluent mixing with the body of water being studied.

"The range proposed of 7.8 to 8.5 for shellfish areas is unnecessarily restrictive. Natural conditions now may exceed the limits proposed in many instances. We recommend a range of 6.5 to 9.0.

"4. It is difficult to establish a valid and meaningful number for turbidity because there is little experience on effects or good data for all of the waters in question. We suggest that the 25 JTU standard be considered temporarily until such experience and data indicate a more appropriate value. We further suggest that the wording be changed to "less than 25 when attributable to solids resulting from other than natural origin".

"5. We concur with the standard proposed for dissolved inorganic substances.

6. Referring to the standard on residues for shellfish growing areas, in our opinion, visible concentrations of waste material or the appearance of shellfish growing areas have no correlation with the well being of the aquatic environment. If such materials have a demonstrable adverse effect, then appropriate controls may be necessary. The first sentence of the standard for residues on Page 16 should be struck and the residue specification on Page 14 which indicates an adverse effect on the use be substituted.

"7. In the standard proposed for sediment we concur with the statement provided that the growth and propagation refers to species of aquatic life that are in some manner economically important to man.

"8. We request that for bioassays of toxic materials the limiting concentration be that which causes no mortalities attributable to the substance tested after two weeks' exposure. This method we believe is more understandable and useful than the LC_{50} methods proposed.

" 9. The standard proposed for color poses some of the same questions indicated earlier for turbidity in terms of experience and data. We request that in this case no number values be promulgated at this time and a simple "adverse effect on use" specification be written.

"10. We do not understand why bioassays would be required for shellfish growing area under aesthetic conditions. It is requested that the last sentence on Page 17 be struck.

"The establishment of standards for aesthetic conditions that specify no evidence of matter other than from natural causes or origin appears to be far beyond that necessary to protect the use. For example, with today's sensitive instrumentation, miniscule quantities of other than natural material could be detected and yet no aesthetic problem exist.

"Now a few general comments are made about the tentative standards proposed. As pointed out earlier in our suggested criteria, we believe that any bioassay performed should be related to existing water use and performed on resident species. This applies directly to the proposed standards on Residues, Toxic or other deleterious substances and aesthetic considerations.

"We believe that the oyster larval bioassay test is not appropriate for the waters under consideration because no natural oyster sets occur in these waters.

"Several specifications, notably those relating to pH, turbidity, temperature and color either infer or state that no variance in the levels observed are allowed when natural levels fall outside the range specified. We believe that this is unnecessarily restrictive in all of these instances and that some provision for variance be provided outside the specified range if such natural conditions which are by definition out of the control of any discharging industry or municipality should occur.

"It is possible that several of the standards proposed including pH, oxygen and turbidity will fall outside the limiting levels stated on occasion due to natural causes. At such times the implementation of the standards proposed is not clear. A standard that is not feasible to meet cannot be implemented and detracts from the overall standards proposed.

"The reference made to other unidentified interstate waters on Page 18 of the brochure is not an acceptable means for promulgating standards for such unknown waters. If found necessary additional hearings should be held when such waters are positively identified.

"Finally, the implementation schedule noted in Table II indicates that secondary treatment will be required of nearly all industry and municipalities. In our opinion this requirement is far in excess of that required to meet the needs of all present and forseeable future uses of most of the waters in question and any reasonable standards promulgated. Further, secondary treatment may not be the appropriate solution to meet such standards that might be exceeded. Until such a need is established as necessary and proper in each specific instance, the installation of such expensive measures would be a misappropriation of both public and private funds. For these reasons we request a deletion of the columns of Table II entitled "Tentative Future Waste Treatment or Control Needs", and "Schedule of Compliance".

"Instead we submit that the implementation and schedule of the promulgated standards be accomplished with the legal tools available to the Pollution Control Commission which are adequate to enforce timely compliance with any reasonable standards adopted.

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"In conclusion it is our request that after these hearings are completed and the testimony reviewed, a meeting of technical people involved be arranged where the areas of disagreement and suggested changes can be discussed in detail. We also request that the record be held open until April 15, 1967, for the submission of supplementary statements.

"We appreciate this opportunity to comment on the proposed standards. We congratulate the Pollution Control Commission for its continued good efforts on a truly difficult task. We hope that these comments and suggestions will be of some value. If any further information or elaboration on this statement or other information relative to standards would be helpful, we would be pleased to comply."

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MR. TOLLEFSON: I also hereby endorse and adopt on behalf of Rayonier, Inc., the statements and presentations made by the Northwest Pulp and Paper Association to this Conference.

We are aware that it would be impossible

ROGER TOLLEFSON

to review these technical data in any detail in the limited time available during this Conference. However, we do want to address ourselves to what we regard as the major points.

We have made every effort, including a very recent review of many of the original records in the Regional Office, to determine the basis for the assertions and conclusions stated in the Federal report. Despite this, we have been unsuccessful in obtaining answers to the following questions:

1. Why is it that the industrial use of the waters of Port Angeles Harbor for waste assimilation by Rayonier is precluded when such use is regarded as acceptable for others within the same harbor and as acceptable in another water area at Anacortes? The unpublished studies in connection with the report agree with our findings that there is very rapid flushing in Port Angeles Harbor and conclude that the principle of discharge into that bay with a diffuser outfall is completely feasible.

2. What bearing can limitations on dissolved solids possibly have on contended sludge bed formation or effects? Representatives of the Federal Water Pollution Control Administration have told us that they

do not know. Yet the report would still require such limitations.

3. Where are the continually referred to Port Angeles clam beds and the implied landing or use statistics? When we ask to see the supporting records, we are told there are none.

4. Where are the data supporting the continual references to the "killing" of the various biota, including juvenile salmon, in natural occurrence in Port Angeles Harbor? We cannot find any reference that would indicate that this aspect of the matter has been studied.

5. The report, after discussing the live box studies on juvenile salmon, recommends that certain water quality criteria relating to total sulfides, dissolved oxygen, sulfite waste liquor, pH and other criteria be met at all times. After asserting in effect that such criteria will as to Port Angeles Harbor "provide for the protection of young salmon and other fishes in these waters", why is it that these criteria receive no further attention in formulating the ultimate recommendations of the report?

In addition to these basic questions, we challenge both the validity and the pertinence of the artificial techniques used, that is, the asserted live box and laboratory results, and the attempt to say that such results have any significant meaning in nature. For example, to say that the results of the juvenile salmon live box experiments are of any consequence would be the same as saying that the death of some robins held captive in a sack attached to the exhaust pipe of a car would prove that automobile exhaust fumes are "doing extensive damage" to our bird populations. Moreoever, other than the live boxes in immediate proximity of outfalls or sludge beds, no abnormal mortality was found.

The attempts to attach any importance whatsoever to the results of the so-called oyster larvae bioassay are even more unrealistic. We cannot find any pertinency in the failure to rear a delicate form of life in a laboratory beaker under completely unnatural controlled conditions, and the lack of pertinency becomes doubly apparent when it is realized that the form of life involved is never--I repeat never--found in these waters.

Would the failure to rear such a form using the effluent from a secondary treatment sewage plant mean that all cities must, therefore, evaporate and burn 85 percent of their final sewage effluent?

One further point. We regard the

recommendations as to removing all sludge beds and putting the contents thereof on land to be unsound. Also such removal is not feasible with the use of equipment of types available at the present time.

Against the possibility of there being any misunderstanding, let me state here and now that there has been no refusal on the part of the Federal staff people to meet with us, discuss any point, or disclose to us any requested data which they have. We have been given every consideration and courtesy. However, we have not received factual answers to what we consider the pertinent questions here involved.

Although we have already made the same inquiries from time to time in the past, I would like once more to ask just three simple questions which I believe sum up the entire Port Angeles controversy:

1. What water uses or resources are presently being damaged by Rayonier in Port Angeles Harbor?

2. In what manner and demonstrated by what relevant data?

3. To what demonstrable extent and in what demonstrable manner would any use of these waters be benefited or increased by adoption of the recommendations

of the report?

Rayonier stands ready to take all reasonable technological steps to assure the multiple use of the water resources. We cannot, however, subscribe to the expenditure of substantial corporate funds in a manner that would yield no beneficial results in terms of enhancing water use. In the Port Angeles area, we are convinced on the basis of available scientific evidence that no existing or foreseeable water use would be benefited by adoption of the Federal recommendations.

Thank you.

CHAIRMAN STEIN: Thank you, Mr. Tollefson.

Are there any comments or questions?

MR. HARRIS: I think I have one question here.

On the first page you mentioned that the report singled out Rayonier and did not require waste treatment from other industries, or whatever way you worded it, within the same harbor area. To what are you referring, Mr. Tollefson?

MR. TOLLEFSON: I assume you mean the second page?

MR. HARRIS: Yes, I find it now on the second page.

MR. TOLLEFSON: Yes, point No. 1.

MR. HARRIS: Your item No. 1.

MR. TOLLEFSON: Yes. There is a differential in application within Port Angeles Harbor as represented by the Federal report between Rayonier and Fibreboard. There is also a differential between Rayonier in Port Angeles and the Anacortes operations.

I am not saying that the other two are wrong. In fact, I believe the other two are every bit acceptable. I merely point out there is a difference in approach here.

CHAIRMAN STEIN: What is the difference? I don't read it in the recommendations. I see Fibreboard and Rayonier, as I read the Federal one, and the recommendation of the State seems to be identical.

MR. TOLLEFSON: No, the Fibreboard and Anacortes operations do not call for what in the Rayonier requirements is point No. 2--no. Such reduction--anyway, that one on to reduce the PBI. I think it is point No. 2 on the Rayonier requirements.

CHAIRMAN STEIN: Yes, yes. That is right. That is correct.

MR. HARRIS: Thank you.

CHAIRMAN STEIN: May I go over this? And

again this is just for information, so don't worry about the questions.

There are several recommendations made by the State and the Federal people. One, as I read yours, you would be in favor of constructing an outfall to have maximum diffusion? That is Recommendation 3.

MR. TOLLEFSON: I certainly personally believe that this is an item that should be very seriously considered.

CHAIRMAN STEIN: Right. O.K.

Now, on item 2 we recognize your differences right there.

MR. TOLLEFSON: Correct.

CHAIRMAN STEIN: All right. Now, on item 1, let's go to that.

By the way, for the record, item 2 deals with the maximum of 10 parts per million sulfite waste liquor and provides for a reduction in the discharge of sulfite waste liquor solids.

Provide primary treatment to remove the settleable solids, how do you feel about that?

MR. TOLLEFSON: Again I believe that this is an item that must be investigated.

CHAIRMAN STEIN: Right. And what is your view on the item 4, dredging?

MR. TOLLEFSON: I cannot see how this could be accomplished either technologically or perhaps, I suppose to use an expression, legally in terms of what constitutes a sludge bed, this sort of thing. For the moment let's leave that one to you and your people.

CHAIRMAN STEIN: Leave the legally out of it, Roger. We are doing that all over the country.

The question here, and I think from a legal point of view--this may be for the industry, and I am not making a judgment whether this is desirable or necessary in any case, because we have this problem all over--but I think the essence of the problem is this. First we have to get some experts in if we are decided that the sludge beds have to be removed. In some of the cases they decide you don't, some they do. You have to measure the extent, the depth and the volume of these matters. Then we decide whose responsibility it is to remove the beds. Sometimes it is an industry or a private party, sometimes it is a public body, generally a county, but sometimes a city, and sometimes it is the Federal Government. And then we can move ahead.

But if we come to the conclusion, that is the State agency and ourselves, that the sludge beds are deleterious to water quality or a water use, I don't think that the legal issues are insurmountable in defining the beds and determining who has to remove it. We are engaged in that process all the time.

So this is not the question. The question is how do you feel about it?

MR. TOLLEFSON: Well, let me go back to the first question I raised, the technology of it, and let me use the Rayonier area as an illustration here.

There are some sludge beds in the immediate area of the Rayonier operation that have been studied not only by Rayonier but by the Federal people and the State people, and I believe all three organizations are in very close agreement as to the nature of them. The extent is reasonably delineated. The depths vary from a very small fraction of an inch to, well, shading into zero up to, oh, a matter of several feet. How can it be done, considering the looseness, the nature, physical nature of the material? Obviously there will have to be suction dredging. With present equipment, clam shell or any other such would be completely out of the question.

Bearing in mind that we know now that the effects, whatever they may be, of sludge beds are directly related to the surface area of these beds, how would you remove that small a--well, for that matter, any deposit without having the immediate redeposition from material you did not quite pick up, to the point that I wonder if you wouldn't still have the same area?

CHAIRMAN STEIN: This is the question. I sympathize with you, you know.

And let me make it clear to the people here, when we are dealing with scientific facts, these facts are the same whoever does it, whether the oystermen, the State people, the City or the State or the industry. And Mr. Tollefson has been in this business a long time.

We do have improved methods of dredging. I don't want to presume to give an answer now. The Corps of Engineers and others are working on these improved methods.

I think, though, the question we have to get to first, whether the whole thing is worth the powder to blow it up. The question here is, and I think the judgment, as I understand it, or the recommendation, and this is joined in by both the Federal investigators and the State investigators, is this existing sludge material should be removed because its presence is deleterious to the biota in the area. Now, if this is so, then maybe a man like me gets the next star job of trying to enlist the Corps of Engineers or some consulting engineers and seeing if it is at all possible to do it. But what I am getting to you is that the first question--

MR. TOLLEFSON: I think certainly this points up the question that was raised earlier by both, let's see, I believe Mr. Thieme and Mr. Julson in terms of the economic aspects here. Whether or not any sludge beds should be removed, in my opinion, assuming at the moment it is technologically possible, would be a function of the cost of that as against the benefit. This is lacking in this present Federal report before us. We do not--at least I do not find it there.

CHAIRMAN STEIN: No, I don't think it is there. And I think Mr. Thieme brought this out, the Delaware group did this. I think in the answer to the question to Mr. Harris, they came to a judgment that may have been related to cost-benefit or it may have been an exercise. But I think the issue of cost-benefit ratio has been considered in various fields, including water pollution control. It has never been incorporated in Federal or, as far as I know, State legislation.

Now, you can think whatever you want about cost-benefit ratio, but dependent upon the assumptions you use and the formula you use, you may achieve a wide range of results or move from one end of the spectrum to the other.

The point is, though, the contention that you people are making in terms of cost-benefit ratio is not one that has generally been followed in the water pollution control concept. Supposing you had a danger that was harmful to health. I don't think that any of the legislators in any of the cases that we came before pointed to a cost-benefit ratio.

In other words, this concept--and I am not deprecating it, but it is something that I don't find in the Washington law statewise, I don't find in the Federal law, and it is a concept--again I may be looking at this as a lawyer--that has been proposed many times but has never been incorporated by either the State or Federal legislature.

MR. TOLLEFSON: I hate to argue law with you. But let me point out that for whatever bearing it has today, the original 1945 State of Washington Law says--and I forget the exact wording, but in the introduction to it where it says that in effect pollution is not to be permitted, or to that effect, it also then goes on to say to the effect of "commensurate with", and then they introduce economic factors.

I wonder if this same thing is not embodied in the Federal Water Act.

CHAIRMAN STEIN: I can tell you what the Federal Law says, and that is it has to be physically and economically feasible. Now, Roger, again, we have both been in this field a long time. The difference between a concept like that and a cost-benefit ratio is tremendous.

I think Mr. Thieme pointed this out, in the system that they used in the Delaware, and this was in the chart he put in, you get alternative A, B, C, D, and you can go on, and to each of these alternatives you can assign a cost or a benefit. This is the concept of the cost-benefit ratio.

The concept, I think, that is embodied in the State of Washington Law and in our law is the economic feasibility test. The test here, as far as I can see, and I said this many times, that anyone can clean up pollution by putting any company out of business, but the challenge is to keep you in business and keep you in a competitive position and allow you to grow and yet clean up pollution. This concept is not, as I see it in our water resources field, co-equal with that cost-benefit alternative we used.

I appreciate the views here, but I think for the people who are sitting on the panel we have the

State and Federal laws to administer and I think the concept of this economic feasibility in the Washington law and the Federal law almost entirely coincide. We don't have, I don't think, a different test to use.

But as I understand it in the field, this is not necessarily the cost-benefit ratio.

MR. TOLLEFSON: In any event, to perhaps go back closer to, let us call it, a discussion of the Conference, you asked my opinion.

CHAIRMAN STEIN: Yes.

MR. TOLLEFSON: So for whatever my opinion may bear here, in my considered opinion it would not be reasonable to attempt to dredge up these particular sludge beds.

CHAIRMAN STEIN: Right. Thank you.

Thank you very much.

Mr. Harris?

MR. HARRIS: Do you have anything, Mr. Poston?

MR. POSTON: No.

MR. HARRIS: The final participant in this group will be Dr. Herman Amberg, representing Crown Zellerback Corporation.

STATEMENT OF HERMAN AMBERG

MANAGER OF MANUFACTURING SERVICES

CROWN ZELLERBACH CORPORATION

DR. AMBERG: Mr. Chairman, Conferees.

My name is Herman Amberg. I am Manager of Manufacturing Services for Crown Zellerbach Corporation. I live in Camas, Washington, where I am assigned to the company's Central Research Division.

I am here today to describe the water quality control program which has been under way for several years at our Port Angeles Division.

Our industrial involvement in Port Angeles is a 500-ton-per-day newsprint and printing paper mill with three paper machines. The mill's daily production of 400 tons of groundwood is made in part by conventional stone grinders and in part by disc refiners.

The company several years ago recognized the potential problems which could develop through continuous discharge of pulp and paper machine effluents into the inner Port Angeles Harbor. An extensive in-plant control program was started several years ago which involved rerouting of the plant sewers. This program is completed and now all process effluents have been removed from the inner harbor and are presently discharged into the Strait of Juan de Fuca.

In addition, in-plant improvements initiated have resulted in substantial reduction of the fiber load discharged to the receiving waters. In 1964 an additional step was taken by the closing of our sulfite pulp mill, which eliminated the discharge of a major portion of the mill's BOD load. Now no chemical pulp is manufactured at our Port Angeles division. The elimination of the spent sulfite liquor resulted in an over-all mill BOD reduction of 70 percent.

It is a well known fact that water movement in the Strait of Juan de Fuca is swift and mixing and dilution of effluents discharged at our Port Angeles mill are rapid. No evidence of sludge deposits had been noted in the vicinity of our outfalls and no sugnificant depression of the dissolved oxygen concentration attributable to these discharges has been noted. In fact, no significant change of water quality has been detected which would preclude the use of these waters for other purposes.

Our observations are confirmed by the following statement taken from Page 461 of the Federal Water Pollution Control Administration report entitled "Pollutional Effects of Pulp and Paper Mill Wastes in Puget Sound" issued in March 1967:

"The Crown Zellerbach Corporation pulp (mechanical) and paper products mill, located at the inner end of the Harbor, discharges its wastes directly to the Strait of Juan de Fuca. Except for some transient local collection near the outfall these wastes are generally dispersed seaward by Strait currents and, thus, are not prominent within the main Port Angeles study area."

With these facts established, we can see no need for primary treatment at our Port Angeles division. The hydraulic characteristics of the Strait of Juan de Fuca preclude the formation of sludge beds that would have a significant effect upon water quality. Again no evidence is presented in the Federal Water Pollution Control Administration report of March 1967 which would indicate that primary treatment of our process effluents is needed. In fact, one station about one mile north of our outfalls was used as a control station or clean water station by the Federal-State scientists.

In summation, we conclude that the discharges from our Port Angeles division do not affect other water uses nor do they produce significant changes of water quality. On the basis of data available we believe that primary treatment of wastes discharged directly into the Strait of Juan de Fuca is not needed and that primary treatment will not result in any tangible benefits to other water users.

Mr. Stein and Conferees, on behalf of Crown Zellerbach, I wish to thank you for giving us this opportunity to appear here today. We hope that our testimony will be of value to you in arriving at a water quality control program beneficial to all water users.

Thank you.

CHAIRMAN STEIN: Thank you, Dr. Amberg.

Are there any comments or questions?

Mr. Poston?

MR. POSTON: No.

CHAIRMAN STEIN: Dr. Amberg, you are my favorite kind of scientist. I am not sure I always agree with you, but I am sure I always can understand you.

DR. AMBERG: Thank you.

CHAIRMAN STEIN: And any scientist who can do that for me is indeed welcome. (Laughter)

No questions. Thanks.

MR. HARRIS: Mr. Chairman, that concludes the list of people who have given me their names and indicated their desire to make statements. There are, however, two statements, one from the Northwest Fisheries Association and one from the Tacoma Sportsmen's Club.

Neither of the people are here who presented these, and with your permission I should like to have these introduced into the record.

CHAIRMAN STEIN: Without objection, this will be done.

(The presentations referred to by Mr. Harris read as follows:)

NORTHWEST FISHERIES ASSOCIATION
Incorporated 1951

911 Western Avenue
SEATTLE, WASHINGTON 98104

MAin 3-0102

Trustees:
Wm. B. Hall
Nick Radovich
William A. Ritter
Myer A. Bornstein
Martin Kihara
William S. Gilbert
Vernon Swanes
George E. Federspiel
Palmer G. Olson

Walter B. Johnson
President
Royal A. Frew
Vice-President
John Richardson
Secretary
George E. Federspiel
Treasurer
Charles R. Pollock
Executive Secretary

September 6, 1967

Chairman, Conference in the Matter
of Pollution of Navigable Waters of Puget Sound,
Straits of Juan de Fuca and Tributaries and
Estuaries
Olympic Hotel
Seattle, Washington

Dear Sir:

The Northwest Fisheries Association is an organization of the fresh and frozen fish and shell fish dealers of Washington and Alaska. Our members include virtually all dealers engaged in this trade and maintain a continuing study of all areas affecting the seafood industry of the Pacific Northwest. Over the years we have studied and participated in pollution control activities and have supported efforts to reduce pollution of our state waters. We have studied the report entitled "Pollutional Effects of Pulp and Paper Mill Wastes in Puget Sound" dated March 1967, and we believe the finding of the report to be sound and consistent with efforts to reduce pollution and establish better aquatic resources. We feel the findings of this body are of the greatest importance in that they once and for all set forth specific information relative to current pollution and recommend solutions. We urge the Pollution Control Commission of Washington State to adopt the findings of this report and to put the recommendations into effect immediately.

Sincerely yours,
NORTHWEST FISHERIES ASSOCIATION
(Signed) William S. Gilbert

William S. Gilbert, Chairman
Legislative Committee

WSG:ls

The presentation of the Tacoma Sportsmen's Club reads as follows:)

TACOMA SPORTSMEN'S CLUB

Statement to State - Federal Conference on water pollution in Seattle, Washington

September 6, 1967. Murray Stein - Chairman.

Mr. Chairman and Members of the Conference:

We appreciate this opportunity of participating in the second State - Federal Conference regarding water pollution in the Puget Sound area. The first, as we know, was held January 16-17 in 1962. That was more than 5-1/2 years ago.

This continued struggle to convince some industries that prevention and eventual eradication of pollution is one of the most critical problems of our environment has boiled down to what new technique can be developed by industry spokesmen to further delay pollution cleanup by some industries. The technology is available to get the job done and in many cases the industrial pollutors would find it profitable to prevent or clean up their pollution. Many examples could be cited where former waste products are now profitable for use elsewhere.

It is interesting to note that the pulping industry had only 43 percent compliance for clean-up as was reported in the official report of the State-Federal conference of January 16-17, 1962 in Olympia, Washington. A copy of that report is presented for your convenience and reference, Mr. Chairman.

Just to recall a little history, a hearing on pulp mill pollution was held in Olympia, Washington, February 5, 1958, almost ten years ago.

We strongly urge that a transcript of that hearing be placed into the record of this conference. Two of the present state's Water Pollution Commission members of 1958 are members of this same commission today. The then Director of Fisheries, Mr. Milo Moore, had the courage to propose standards in 1958 based on many years of research, but was given no support as far as can be determined, by any of the other four on the Water Pollution Commission of 1958.

We request again population raw sewage equivalents for various industries wherever these equivalents would be applicable. It is much simpler for the public to comprehend than pages of numbers setting pollution standards. Numbers used by technicians mean nothing to the general public, but raw sewage equivalents based on population wherever possible gives the public a graphic comprehension of the problem. This is the same type of comparison given at the first conference in 1962 regarding sulphite waste liquor pulp mills. It was quite a revelation, and the comparison still holds true today. The area water classifications should be "clean, semi-polluted, polluted, and grossly polluted" as was proposed

TACOMA SPORTSMEN'S CLUB

previously at the June 6, 1967 hearing.

Attached are raw sewage equivalents of sulfite waste liquor producers as a result of the conference of January 1962 when you were Chairman of that conference. The figures released then were a revelation to say the least. These equivalents were again placed into the record at the Mt. Vernon hearing of February 9, 1967.

The statement presented at a hearing of the State Water Pollution Commission of June 6, 1967 in behalf of the Tacoma Sportsmen's Club and Washington State Sportsmen's Council is also attached for the record for the perusal of the Federal conferees.

Our conclusion is that the Sisyphus like delay has been far too long and too costly in vital natural resources to the general welfare of this state and Nation.

The only standard worthwhile is the prevention and goal of eradication of pollution in all its forms.

The dilution of pollution has only brought on our present "national disgrace."

Respectfully submitted,
JOHN C. MIGDULA, Chairman
Pollution Control Committee
by (Signed) Ed Brezina
Vice Chairman
Tacoma Sportsman's Club
903 Commerce
Tacoma, Washington

(Progress Report No. 1 follows:)

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PROGRESS REPORT NO. 1

of the

TECHNICAL COORDINATING COMMITTEE

considering

Pollution of Waters of Puget Sound, Strait of Juan de Fuca and their Tributaries and Estuaries

March 5, 1962

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service
Region IX, Portland, Oregon

STATE OF WASHINGTON

Pollution Control Commission

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INTRODUCTION

The wise conservation, development, and use of the water resources of the State of Washington and throughout the Nation are important to the health and economic well-being of people everywhere. The prevention and control of water pollution ranks high in importance among the problems confronting Federal, State, and local governments, industry, and citizens generally in their efforts to protect this vital state and national resource.

In an effort to seek a solution to a long-standing and difficult problem in the State of Washington, Governor Albert D. Rosellini, in a letter dated November 22, 1961, requested Secretary Abraham Ribicoff of the U. S. Department of Health, Education, and Welfare to bring to bear on this difficult problem that portion of the Federal Water Pollution Control Act dealing with enforcement measures for the control of the pollution of interstate or navigable waters. This assistance was in addition to other aid already provided the State of Washington under that Act, including financial grants to Washington cities to assist them in the construction of municipal sewage treatment works; financial grants to the State of Washington Pollution Control Commission to strengthen its operations; research and training grants to universities in Washington as well as to other public and private agencies and individuals on matters dealing with the prevention and control of water pollution; and the establishment of water quality monitoring stations to collect data on the chemical, physical and biological quality of water within the State of Washington.

As a result of this request, a conference was held on January 16 and 17, 1962, at Olympia, Washington, between officials of the U. S. Department of Health, Education, and Welfare, and the Washington Pollution Control Commission, in accordance with procedures outlined under Sec. 8, the enforcement section, of the Federal Water Pollution Control Act. This initial conference was concerned with the pollution problems in the waters of Puget Sound, the Strait of Juan de Fuca, and their navigable tributaries and estuaries. A second conference, to be concerned with the waters of the Upper Columbia River and its navigable tributaries within the State of Washington is proposed for Spokane, Washington, about May 1962.

CONCLUSIONS OF CONFERENCE

The conference met for two days, January 16 and 17. Following the presentation of statements by state officials, industrial representatives, conservation groups, fish and shellfish industry representatives, and others comprising over seven hundred pages of direct statements and attached materials, the conferees, composed of representatives of the Washington State Pollution Control Commission and the Division of Water Supply and Pollution Control of the Public Health Service in the U. S.

Department of Health, Education, and Welfare, agreed that: the waters of Puget Sound, Strait of Juan de Fuca and their navigable tributaries and estuaries are waters subject to the jurisdiction of the Federal Water Pollution Control Act; and that pollution of these waters exists as a result of waste discharges coming from various municipal and industrial sources in the Puget Sound and Strait of Juan de Fuca area, and notably from the pulp and paper industry.

The conferees recognized the excellent progress that had been made by many industries in the State of Washington in controlling pollution. They also recognized that the permit system of the State of Washington is a reasonable method of controlling pollution in the State. The conferees concluded that measures taken to date by some of those contributing pollution to the waters of Puget Sound and the Strait of Juan de Fuca area had not been adequate or sufficient to control water pollution, and that delays had been encountered in taking corrective actions by those contributing pollution.

With respect to the seven pulp and paper mills contributing the largest percentage of the total pollution, the waste discharge permits issued by the Washington Pollution Control Commission prior to the conference had established January 1, 1962, as the date by which the mills could propose an alternate plan to achieve the pollution-control goals established by the permits. The Commission had also established March 1, 1962, as the date by which the mills were to submit engineering plans to carry out proposals to control pollution. In view of the fact that the January 1, 1962, date had passed, the conferees agreed to extend to July 1, 1962, the date by which alternate plans for the control of pollution were to be submitted by the mills to the Washington Pollution Control Commission; and, further, that engineering plans for control of pollution were to be submitted to and approved by the Washington Pollution Control Commission not later than January 1, 1963. Thus, the conferees' action in this regard was to the effect of giving the pulp and paper mills additional time: six more months to submit alternate plans and ten more months to submit engineering plans, to meet the requirements established by the Pollution Control Commission under State of Washington law.

In addition, the conferees concluded that the Washington Pollution Control Commission should proceed under State of Washington law to develop a plan for controlling pollution from all remaining municipal, industrial, and other sources of pollution in the Puget Sound and Strait of Juan de Fuca area to prevent pollution from interfering with public health or water uses. Finally, the conferees agreed to the development of a joint action program between the parties of the conference to carry out the conclusions and recommendations of the conference.

PURPOSE OF THE TECHNICAL COORDINATING COMMITTEE

The purpose of the Technical Coordinating Committee is to provide the necessary scientific, legal, and other counsel and direction to the Washington Pollution Control Commission and the U. S. Public Health Service in their joint efforts to bring to a successful conclusion the recommendations of the conferees. These efforts will include laboratory studies, field investigations and other scientific and related studies to support further the investigations and reports of the Washington Pollution Control Commission that have provided the basis for the actions taken by the State of Washington to control pollution in the waters of Puget Sound and the Strait of Juan de Fuca and their tributaries and estuaries.

ORGANIZATION OF THE COMMITTEE

The Technical Coordinating Committee is composed of representatives from State and Federal agencies having scientific or other interests and responsibilities involving water uses affected by the discharge of pollutants into the waters under consideration. The Committee includes representation from the Washington Pollution Control Commission, the Washington Department of Health, the Washington Department of Fisheries, the Washington Department of Game, the Washington Attorney General's Office, the U.S. Fish and Wildlife Service and the U.S.Department of Health, Education, and Welfare. Committee recommendations are to be directed to Mr. Earl Coe, Chairman of the Washington Pollution Control Commission, and Director of the Washington State Department of Conservation, Olympia, Washington; and to Mr. Leonard B. Dworsky, Officer-in-Charge, Pacific Northwest Water Supply and Pollution Control Program of the Department of Health,Education, and Welfare, Portland, Oregon. Technical direction of the Committee's activities will be guided by Mr. W.W.Towne, Deputy Director of the Pacific Northwest Water Supply and Pollution Control Program, and Mr. Alfred T. Neale, Acting Director of the Washington Pollution Control Commission. The Secretary of the Committee will be Dr. A. F. Bartsch, Chief of Enforcement Activities of the Pacific Northwest Water Supply and Pollution Control Program, Portland, Oregon.

TENTATIVE STUDY PROGRAM

The Committee has met three times since the January 16 conference. Plans are under way to initiate studies and investigations along the following lines as a result of the committee's recommendations: engineering surveys relating to the sources of municipal and industrial pollution; related biological and chemical studies of pollutants and the waters into which the pollutants are discharged; oceanographic studies concerned with the dilution and diffusion of pollutants; and economic and legal investigations related to the over-all pollution problem.

ACTIONS TAKEN TO DATE

Actions taken to date include the organization of the Coordinating Committee; the determination of the general outline of the Committee's study and investigation program; and the assignment of one of the Public Health Service's chief scientists to provide the on-the-ground coordination to the joint State-Federal investigations program. Dr. A. F. Bartsch, currently Deputy Chief of the U. S. Public Health Service's national research program at the Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio, has been assigned to this coordinating task. A top technical staff to support the joint investigation program is being assigned to the Portland office of the Public Health Service to provide for early initiation of the contemplated investigation and study programs. Certain phases of the oceanographic and biological studies are already under way. Contract studies dealing with the economy of the Puget Sound area are scheduled to start at an early date.

BACKGROUND INFORMATION

At the conference held on January 16 and 17, 1962, various points of view on the water pollution problem in the Puget Sound-Strait of Juan de Fuca area were presented. These included the viewpoints of those contributing to this pollution problem as well as of those concerned about the effects of using polluted waters or waters that may be subject to pollution. These viewpoints, comprising over seven hundred pages of testimony and attached material, are contained in the record of the conference.

As a result of the conference and subsequent public discussions, a number of questions have been raised. The following information is presented as background for the participants on the Technical Coordinating Committee and for the many others concerned.

Federal Water Pollution Control Act

A half century of national concern about the problem of water pollution resulted in the passage of a comprehensive water pollution control act by the Congress in 1948. That Act for the first time assigned enforcement responsibilities to the Federal Government on matters of interstate pollution. The 1956 Amendments to the Federal Act clarified and simplified the enforcement section. Among other things, and at the request of the States, the 1956 Amendment provided that conferences be held by representatives of the Federal Government and the State or States involved in cases of interstate pollution, for the purpose of encouraging public presentations and discussions on the pollution problems in question. It was anticipated that, as a result of such conferences, solutions could be developed without reliance upon further Federal enforcement action. Thus, conferences are aimed at supporting and encouraging State and local action to control pollution, as an initial step.

Purpose of the Conference.

The word "conference" is used in a formal sense in Sec. 8 of the Federal Water Pollution Control Act. By definition, it is a conference between representatives of the Department of Health, Education, and Welfare and the States concerned. At the conference held at Olympia on January 16 and 17, the official conferees were the representatives of the U.S. Department of Health, Education, and Welfare and the representatives of the State of Washington.

The Federal Act provides that the State concerned can invite such persons as it desires to the conference. Under this provision the Washington Pollution Control Commission invited, for their voluntary acceptance, fifty-eight individuals, groups and agencies for the purpose of allowing them to make any statement they so desired to the conferees. Invitations were extended by the Commission to twelve pulp and paper mills; thirteen industries other than pulp and paper mills; the mayors of ten cities; the health officers of two major county health departments; three major sportsmen's councils in the State of Washington; three Federal departments; and eight fisheries groups including oyster growers, salmon groups and the gill netters association. Others invited included one State Representative; representatives of the Association of Washington Cities, the Seattle Harbor Advisory Committee, the Seattle Metropolitan Council, and the Northwest Pulp and Paper Association; and two University of Washington professors. Supplementing the direct letters of invitation, three hundred news releases about the conference were distributed to all daily and weekly newspapers in the State, to radio and television stations, to five labor unions, and to thirteen members of the State legislature.

In response to these invitations, voluntary presentations were made to the conferees during the two-day session by the Washington Pollution Control Commission, the State Departments of Fisheries, Game, Health, Commerce, and the Washington State Parks and Recreation Commission; the U. S. Fish and Wildlife Service and the U. S. Corps of Engineers; one sportsmen's council, one individual, one State Legislator, the Seattle Metropolitan Council, five oyster growers associations, two labor unions, the Northwest Pulp and Paper Association, and four pulp and paper mills.

Summary of the Conference

The enforcement section of the Federal Water Pollution Control Act provides that, following the voluntary presentations, a summary of the conference discussions be prepared. The law provides that this summary include information on the occurrence of pollution of interstate and navigable waters subject to abatement under the Act; the adequacy of measures taken toward the abatement of pollution; and information about the nature of the delays, if any, being encountered in abating the pollution of waters under consideration.

At the conclusion of the two-day conference, and after listening to the presentations of the various points of view, the chairman summarized the conference discussions. The representatives of the Washington Pollution Control Commission and the U. S. Department of Health, Education, and Welfare, as conferees, were in full agreement that pollution of interstate and navigable waters subject to abatement under the Water Pollution Control Act was occurring; that measures being taken toward abatement of the occurring pollution were not adequate; and that delays were being encountered in abating the pollution.

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Federal Policies on Enforcement Measures Against Pollution of Interstate or Navigable Waters

In order to meet the challenge of the rising tide of pollution created by growing cities and industries, the Congress authorized, in addition to research, technical investigations and studies, financial aid, and other programs aimed at strengthening State pollution-control programs, Federal enforcement in cases of pollution of interstate or navigable waters which endangers the health or welfare of any persons.

There have been fifteen conferences under this enforcement program held in the United States to date, with two scheduled for the near future. In excess of 500 cities and industries have been directly involved in these conferences. The cost of construction of pollution abatement facilities that have resulted directly from these conferences exceeds $500 million. In all cases, cities and industries have complied with requirements specified in the several conferences. Except for one situation, no cases have reached the Court stage.

Thus, while the Olympia conference was the first held under the 1961 Amendments to the Federal Water Pollution Control Act on pollution problems within one State, the conference technique has been widely used during the past five years. The Chief of the Enforcement Branch of the Federal Pollution Control Program has consistently stated that the success of the enforcement phase of the Federal water pollution control program will be counted, not on the basis of how many cases are won in court, but on how many solutions can be reached following the public presentation of facts in a conference such as that held in Olympia.

The principal policy followed by the Federal Government is to strengthen State water pollution control programs in order that problems can be resolved or otherwise enforced at the State level without Federal action. The Olympia conference had this as its purpose. As a result of this conference, the Secretary of the Department of Health, Education, and Welfare has recommended to the Washington Pollution Control Commission that it undertake whatever steps may be necessary to bring about remedial action in this situation. It is the hope of the Federal Government that, based upon the presentation of data at the conference, those creating pollution of the waters of Puget Sound, the Strait of Juan de Fuca and their navigable tributaries and estuaries, will be able to arrive at a satisfactory solution of this problem with the State of Washington's Pollution Control Commission.

It is to be expected that, in working toward a solution to this problem, differing viewpoints will result in differing conclusions. The Washington Pollution Control Commission, responsible for carrying out the law to safeguard the State's water resources, on the evidence of extensive studies and surveys over many years has concluded that pollution exists in Puget Sound and the Strait of Juan de Fuca area. Based on this conclusion, it is seeking to control this pollution, bringing into use applicable State and Federal laws.

The Pacific Northwest office of the Water Supply and Pollution Control Program of the U.S. Public Health Service has worked closely on pollution control matters with the Washington Pollution Control Commission since 1949. It has reviewed and considered the State's activities and has been aware of its policies, operations and programs. The U. S. Public Health Service is acting in support of the State of Washington on this situation.

As a result of the conference, field survey and investigation work in the Pacific Northwest office of the U. S. Public Health Service is being expanded for the purpose of developing cooperative studies with the Washington Pollution Control Commission to seek additional up-to-date information in order that both the Washington Pollution Control Commission and the Federal Government can be prepared for such future eventualities as may be necessary to carry out both State and Federal laws.

Seven pulp and paper mills in Puget Sound and the Strait of Juan de Fuca area are contesting the Washington Pollution Control Commission's order requiring the mills to control pollution created by them. The industries have recorded in the conference that they are dumping polluting substances into the area's waters. However, the mills disagree with the Washington Pollution Control Commission as to the effect of this pollution.

This is not an unusual situation. Experience indicates, however, that reasonable solutions to such differences can be found. The excellent pollution-control effort already made by industry in the State of Washington and throughout many parts of the country leads to the conclusion that agreement can be reached to have both a strong economy and the kind of clean water the Pacific Northwest deserves to have for all purposes.

Basis for the State of Washington's Request for Assistance from the Federal Government

The State of Washington's request for assistance in preventing and controlling the pollution of the waters of Puget Sound and the Strait of Juan de Fuca and their navigable tributaries and estuaries was the result of a long and inconclusive effort by the State to bring about the control of pollution resulting from the discharges from seven pulp and paper mills into these waters.

The conference records that, as early as 1940, efforts were undertaken by the State authorities to seek an equitable solution to the pulp and paper industry's waste disposal problem. The twenty years of unsuccessful effort and the costs and technical difficulties resulting from the vigorous opposition by the pulp and paper mills to the pollution control requirements in the waste discharge permits are the primary reasons for the State's request for assistance from the Federal Government.

Another important reason for the State's requesting Federal assistance results from the basic challenge presented by these pulp and paper mills to the ability of the State to conserve and safeguard all of its waters against pollution. The pulp and paper mills are seeking a fundamental change in State policy which, if successful, would result in largely destroying the effectiveness of the present and otherwise excellent State of Washington pollution control program. This change in policy would subject waters throughout the State to a high degree of pollution by allowing them to be used for the dilution and dispersal of untreated or inadequately treated sewage and industrial waste effluents.

The State's request for assistance from the Federal water pollution control program is in accord with the long-standing policy of Federal assistance to strengthen State and local pollution control programs. Such assistance in the form of research and technical services has been provided for over a half-century. More recently, the Federal Government has been providing financial assistance to cities to construct municipal sewage treatment works, and financial assistance to State water pollution control agencies to maintain strong State programs.

Policies of the State of Washington

A number of questions have been raised, primarily by some in the pulp and paper industry, concerning water quality standards and their application in the Washington Pollution Control Commission's program.

Water quality standards are used in a wide variety of ways in their application to water pollution control programs in the various States throughout the country. A number of eastern States use a stream classification program and specific numerical values for various aspects of water quality to assist in determining treatment requirements for river basins and lakes or portions of them. In a few States, the State legislature, by legal mandate, establishes these classifications and quality requirements. In general, these methods are in use by States in which pollution has already taken a high toll of water quality. States whose rivers, lakes and ocean frontages are highly polluted have found it useful to use these devices as a means of attempting to reclaim, upgrade and revive their water resources from the highly polluted conditions resulting from inadequate control efforts over many years.

Other States have developed effective programs by using requirements which specify the amount of wastes that can be discharged by each industry or other waste-producing operation to achieve generally stated, rather than specific, numerical water quality values. This is accomplished by the establishment of effluent requirements.

The State of Washington has selected, as its method of operation, the establishment of controls over the effluents discharged by waste producers under general water quality values, rather than the establishment of specific numbers for each quality factor along with a scheme for the classification of waters.

The record the State has achieved in the course of its operations under this program shows that this has been a highly successful system. The conference records show that of 532 industrial establishments subject to permit regulations in the Puget Sound-Strait of Juan de Fuca area, 493 industries are in compliance with the effluent requirements established by the State--an average compliance of 93 percent. The percent of compliance for each of the types of industries in this area is shown in the following table.

INDUSTRIAL STATUS
PUGET SOUND DRAINAGE BASINS

Industry or Type of Waste	Number of Plants	Temporary Permits	Permanent Permits	Percent Compliance
Milk	49	1	48	98
Oil and Chemical	107	7	102	95
Fruit and Vegetable	47	2	45	96
Lumber	69	1	68	98
Meat, Poultry and Rendering	73	6	67	92
Sand, Gravel, and Allied Industries	56	4	52	93
Fish Processing	66	0	66	100
Pulp and Paper	22	13	9	41
Miscellaneous	43	7	36	84
Total	532	41	493	93 (avg.)

This record suggests that industries, in general, have not found the manner in which the State of Washington applies water quality standards to be an unsatisfactory procedure.

Pollution problems are generally comparable throughout the Pacific Northwest region. Because of this, the Northwest States (comprising Washington, Oregon, Idaho, Montana, and Alaska) with the cooperation of the Canadian Department of National Health and Welfare, the British Columbia Provincial Department of Health and Welfare, and the U. S. Department of Health, Education, and Welfare, have formed a Pacific Northwest Pollution Control Council.

Ten years ago, the Council, being fully aware of the generally high quality of the waters of the Pacific Northwest, except where control efforts had not yet been fully implemented, made the following statement in their report on Water Quality Objectives:

> "The Pacific Northwest is at present in an enviable position as regards its natural resources and potential development when compared with many other areas of this country. This is especially true of natural waters which are admittedly one of the area's greatest assets. Water is so definitely tied in with the health, welfare, and pleasure of citizens, and with the whole economic structure of the area as to make high water quality objectives not only desirable, but imperative.
>
> "A similar position was held by many areas of this country during the past years. The development of these areas without regard to the implications of pollution has resulted in many cases in the loss of the waterways and streams for any use except the disposal of sewage and wastes. The water essential to growth and to effective living has been dissipated by carelessness and lack of foresight. Water is a factor which can well limit the development of all areas of the country, and, therefore, water pollution control in the Pacific Northwest becomes a conservation and prevention program. Certainly we in the Pacific Northwest should profit by the mistakes of others and establish high objectives with judgment and especially with a view to future development."

The States of Montana and Idaho have used the Pacific Northwest Council's objectives in developing their own water quality requirements. The States of Oregon and Washington also have aimed their water quality programs at the goal outlined in the above statement.

Water quality standards have been adopted by the Washington Pollution Control Commission and are to be found in numbered section .04.210 of the Standards and Rules and Regulations of the State of Washington. Copies of these standards are available, on request, to all interested persons. These standards are considered to be the best approach to water pollution control in the State of Washington, and the use of such standards is in keeping with widespread practice in the United States. The State of Washington and the U. S. Department of Health, Education, and Welfare agree on the merits of the present method of using standards and the present program of the Washington Pollution Control Commission.

The Effect of Adopting Other Types of Water Quality Standards

The suggestion has been made by various pulp and paper industry representatives that specific numerical values be established for each water quality goal to be sought by the State of Washington's Pollution Control Commission. The effect of establishing such specific requirements would be to permit large quantities of pollutants to be added to the waters of the State of Washington. Such a program, of allowing the water resources of the State to be used to dilute and disperse pollution without requiring adequate treatment or otherwise without being controlled by permits issued by the Commission, would despoil the quality of the State's waters, and would seriously affect its economic development.

The policy guiding the Department of Health, Education, and Welfare on this matter was stated by the Federal Water Pollution Control Advisory Board, appointed by the President to advise on these matters of national importance. That Board in its February 3, 1961, report to the Surgeon General of the U. S. Department of Health, Education, and Welfare, stated that the goal of pollution abatement is as follows:

> "The goal of pollution abatement is to protect and enhance the capacity of the water resource to serve the widest possible range of human needs. This goal can be approached only by accepting the positive policy of keeping waters as clean as possible, as opposed to the negative policy of attempting to use the full capacity of water for waste assimilation."

State Requirements For Control of Pulp and Paper Mill Pollution

The conference record includes copies of the specific requirements of the State of Washington with respect to each of the seven pulp and paper mills in the area in question. These permits and their requirements were designed by the State with full consideration of the individual factors present at each of the plants, in consideration of the location of the plant and considering the reasonable and effective remedies available. The seven pulp and paper mills produce, among other things, an organic waste which is equivalent to that produced by over eight million people each day. The State's requirements provide for removal of approximately six million of this eight million waste load. The requirements will result in the continued discharge of two million of this total eight million waste load to the waters of Puget Sound and the Strait of Juan de Fuca. The specific way in which the reduction of wastes is to be accomplished is a determination to be left with the individual mills.

Costs to the Pulp and Paper Mills for Meeting State Requirements

The record of the conference shows that a representative of the pulp and paper industry stated initially that $30 million had been spent by the seven pulp and paper mills to control pollution to date. On questioning, the representative further stated that only 40 percent or about $12 million was actually spent to control polluting wastes and that the balance, $18 million, was spent in improving plant operations, in reclaiming fibers or in otherwise improving the efficiency of the various mills. These latter costs usually bring about savings in raw materials and in mill operations. While they do reduce the amount of pollution produced by the mills, these are efficiencies that industrial establishments would normally desire to undertake under any circumstances in order to avoid unnecessary monetary losses.

During the conference, a representative of one company, making a statement on behalf of three mills located at Everett, Washington, indicated that it would cost the three mills $35 million to meet the requirements established by the Washington Pollution Control Commission with respect to the discharge of sulfite waste liquor.

A recent report by the Acting Director of the Washington Pollution Control Commission notes that, "A careful review indicates that major expenditures involving waste liquor recoveries are involved at four mills, and available conversion cost data indicates that 500 ton mills have been converted for considerably less than $10,000,000. For some of the smaller mills the preliminary contacts indicate expenditures of a quarter of a million dollars or less, a number of which will pay out within reasonable lengths of time."

There are obviously differences in estimating the cost of the control works needed by the seven pulp and paper mills in the Puget Sound and Strait of Juan de Fuca area. A financial analysis to support the cost estimates by representatives of the pulp and paper industry cannot be made directly by the Washington Pollution Control Commission or the U.S. Department of Health, Education, and Welfare. The conferees have under way economic studies which will help to indicate whether the costs stated by the representatives of the pulp and paper industry are, in fact, within the range of costs generally associated for needed control efforts in other comparable situations.

These cost figures stated by representatives of the pulp and paper industry have been used to encourage the idea that threats to close the mills have been made by the pollution control agencies. Neither the Washington Pollution Control Commission nor the Federal Government has ever threatened, suggested, or deemed it necessary to consider closing any of the seven pulp and paper mills involved in this situation. It has been the consistent policy of both the State and Federal agencies to seek an equitable solution to the pollution problem encountered in the Puget Sound and Strait of Juan de Fuca area. Broad experience shows that industry and clean water both can exist to produce benefits for all the people.

Federal Investment in the Puget Sound and Strait of Juan de Fuca Area

The U. S. Fish and Wildlife Service reported to the conference that it spends annually in Puget Sound $300,000 for research, hatchery operations, technological developments, and the collection of statistics. It stated that Federal fisheries investments in the region are valued at two and a half million dollars but that this investment of Federal funds is by no means a full measure of the great importance of fish and wildlife resources of this area.

The Seattle District office of the U. S. Army Corps of Engineers reported to the conference that the Federal Government has a substantial investment in the water resources of the Puget Sound area: for multi-purpose projects $80 million; for navigation projects over $20 million; for flood control projects over $2 million; and for the maintenance of channels, navigation projects and flood control projects, nearly $6 million annually. For projects to be constructed in 1962 and 1963, there is a contemplated further expenditure of $4 million, and, finally, the cost of new recommended projects amounts to $43 million.

This large investment is a partial indication of the wide Federal interest in the conservation, development and use of the water resources of Puget Sound.

Local Expenditures for Pollution Control

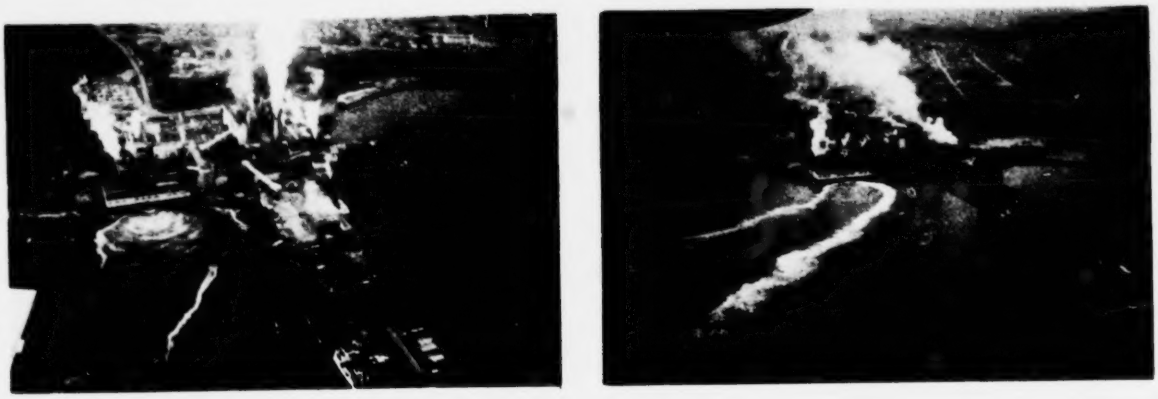
During the past five years, citizens in cities and towns in the State of Washington have voluntarily spent nearly $15 million to construct municipal sewage treatment works to prevent the pollution of Washington's lakes, streams, bays and other waters. The Federal Government has provided $2,750,000 to share with localities the costs of these treatment works. In addition, the people of metropolitan Seattle have approved a $130 million program over the next ten years to prevent and control the pollution of the waters in and adjacent to the Seattle Metropolitan Area. The Seattle Metropolitan Council has already authorized the sale of $125 million in bonds, the first $20 million of which was sold in June of 1961.

Conclusion

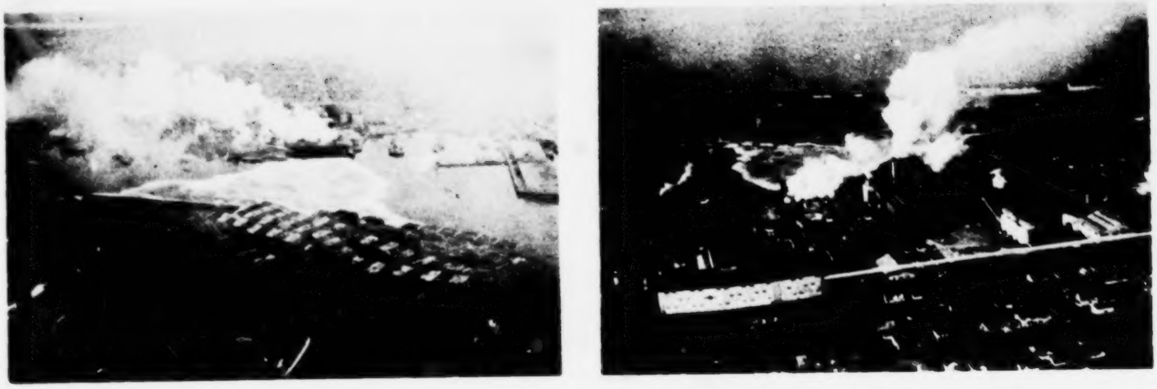
The conference held in Olympia, January 16-17, 1962, between the Washington Pollution Control Commission and the U. S. Department of Health, Education, and Welfare produced for public view and discussion a large amount of data on the pollution problems in Puget Sound, the Strait of Juan de Fuca and their navigable tributaries and estuaries. The data presented by individual citizens, industrial establishments and associations, government agencies, conservation groups, fish and shellfish industry individuals and associations, recreation interests, and others was completely voluntary. Expected differences of opinion were heard and recorded. The conference was an initial step, established by the Congress at the request of the States, to help in seeking solutions to the more difficult problems of pollution on interstate and navigable waters. The Washington Pollution Control Commission and the U.S.Department of Health, Education, and Welfare will energetically seek an equitable solution to this pollution problem. Based on experience elsewhere, there is no reason to doubt that such a solution can be reached.

The record of the conference is contained in two volumes and a volume of appendix material. Copies of this record are available to those desiring them by writing the Washington Pollution Control Commission, Olympia, Washington.

AIRPLANE VIEWS



PORT ANGELES



EVERETT

TACOMA SPORTSMEN'S CLUB

- - -

Mr. Chairman, and members of the Pollution Control Commission, my name is John C. Migdula, representing the Washington State Sportsmen's Council, Tacoma Sportsmen's Club, with combined membership of about 10,000 from all walks of life.

The Pollution problems of both air and water are now considered by discerning conservationists, the most important conservation problems in the Nation and state today. We are here today to discuss proposed water quality standards based on a new concept that was first proposed on April 25, 1967, then mailed within approximately the last ten days to various interested parties for study, perusal, and comments. According to the brochure that was issued we have water in the state where man has not apparently despoiled it yet, that are classified "extraordinary" or Class A. A.

Class A waters classed as "excellent" can be used for domestic water supply for example, but most of the water is chlorinated to protect against disease when used for drinking purposes.

Class B and C water as delineated, are in the degraded category in one form or another, B classed as "good", and C waters classed as "fair", are apparently to continue to be used as dumping grounds for pullutants. One area, the Puyallup River estuary now classed as B is to be advanced to Class A.

In the Puyallup River estuary from the mouth to one mile up river, it is already known to have pulp mill pollution equivalent to the untreated raw sewage (B.O.D.) of about 300,000 people. There is no indication at present that anything is to be done to clean up the pulp mill pollution problem now existing in the river estuary. What is the status of their permit?

The kind of standards that will allow continued dumping of pollutants from whatever source, especially from the large industrial sources will have to be rejected.

Legislation enacted by the recently adjourned Washington state legislature apparently eliminated the "trial de-novo" provision in the old pullution control law by the passage of H. B. 179.

The trial de-novo aspect was quietly restored in an innocuous substitute Senate Bill 52.

An attached copy of that story is told in Argus of March 24, 1967.

It was reported that a long and acrimonious debate over the House Amendment was carried on in the Senate on the last day of the regular session, but the pollutors eventually won there. "The trial de-novo" as we know is a legal technique to allow trials to go on for years by referral and referrals.

The multiple use concept is now generally relied on as the solution to air, land, and water use. The pollutors stand four square for multiple use since they advocate the dumping of tremendous amounts of pollutants, depending on the so-called "assimilative capacity" of the waters to absorb the pollutants. The dilution concept has been going on for years but now we have reaped the "National disgrace" of polluted waters. There can be only one standard for clean water within an industry, otherwise the legal avenues for "trial-de novos" are open that much more.

In the Port Angeles area for example, on May 19, 1967, permits were issued to "clean-up"; to Rayonier Incorporated, Fibreboard Products, and Crown Zellerbach. Rayonier was required to remove all settleable solids and 85 percent of the dissolved solids. Fibreboard was allowed to discharge out into the straits. Crown Zellerbach, dilution into the straits of the dissolved solids and apparently an undetermined restriction on the settleable solids. The pulping industry apparently is the largest single pollutor in the state. The requirements to "clean up" must be the same for all parties within an industry to prevent the charge of discrimination. Permits must not be used to legalize pollution.

It has come to my attention and various state officials that agriculture uses 90 percent of the water within their state. Pulp mills also use tremendous amounts of water of the purest type. Now include the water used by other industries, therefore how much water is actually used by the average home owner within the overall total? In view of the fact that agriculture uses 90 percent of the water as an industry, what anti pollution measures are going to be used regarding the use of pesticides such as DDT for example? The Washington state Sportsmen's Council has gone on record as banning the use of DDT in the United States and is supporting such Federal legislation.

Industry wants "speed limits". The goal has to be "prevention and elimination of pollution." The technology is available.

The pulping industry has the right to use a process of their own choice to prevent and eliminate pollution but apparently they have not solved the problem. Therefore, may we suggest the following as published in Business Week magazine of September 23, 1961, page 38, which states the following about the hydrotropic pulping process:

"The processes, developed over many years by Ralph H. McKee, a retired Columbia professor chemical engineering, uses a hydrotropic chemical sodium xylenesulfonate, as the principal reagent to the pulping solution. Among the benefits claimed for the McKee processes are:

"Lower capital investment and labor costs. McKee says an existing plant could be converted to the hydrotropic process for one-sixth the cost of a new plant.

"Because the hydrotropic process reduces the amount of water needed to dissolve pulp chemicals, it makes it easier to dry out the end product. The semi-hydrotropic process needs only 500 gallons per ton of pulp, compared with 55,000 gallons in older methods.

"The process eliminates the dumping of chemical wastes into rivers and has no objectionable odors.

"Dry-weight yield of the pulping woods will range between 88 percent and 92 percent, compared with the present 60 percent.

"Costs of chemicals used in the semi-hydrotropic process are about 50 cents per ton, compared with between $5 and $30 by present methods."

As of this date no documentary report has been submitted to refute the foregoing claims.

Objection is made to the dumping of sludge by Metro in the Seattle area of about 50 tons per day.

TACOMA SPORTSMEN'S CLUB

The sludge is classified by one Federal government expert as not having the equivalent to primary treatment.

A serious industrial pollution problem apparently exists in the Chambers Creek estuary where steelhead migrations occur for the Game Department's South Tacoma Fish Hatchery. What classification is listed for that area and what is the status of the pollution permit for South Tacoma Newsprint regarding effluents and the large log storage area?

Prevention and the eventual elimination of pollution is the only standard now available to reverse our present continuing "national disgrace". Objection is raised in having various areas of our water resources used as dumping grounds for pollutants. Dilution of pollutants is not a legitimate multiple use of the public's water resources.

Respectfully submitted

John C. Migdula, Chairman
Pollution Control Committee
Washington State Sportsmen's Council

(Clippings from Argus magazine follow on pages 407a and 407b.)

From: Transcript of Federal-State Conference In The Matter of Pollution of Interstate Waters - Puget Sound, Strait of Juan de Fuca and Their Tributaries and Estuaries - State of Washington, January 16-17, 1962,

The Governor Did Not Veto--

Polluters' 'Hidden' Victory Big

By MIKE LAYTON
Our Olympia Correspondent

OLYMPIA—The Legislature passed nine of ten bills dealing with water pollution and water uses during the regular session. But one little amendment to an entirely unrelated measure may have gone a long way toward undoing them all.

"Something constructive happened, then it unhappened," says Senator Wilbur Hallauer, the Oroville Democrat who headed the interim Committee on Water Resources.

Although the "backdoor" assault was aimed at the newly-passed pollution laws, the amendment frightens other agencies, too, chiefly the Tax Commission and the Liquor Board.

"I think a large part of the pulp industry – not including Weyerhaeuser – made a deal and then welshed on it," says Hallauer.

The amendment that angers Hallauer and *Senator Wes Uhlman*, Seattle Democrat, apparently means that a judge can interpret the intent of the Legislature when it passed a law.

Also alarmed is UW Law School *Professor Cornelius Peck*, who says it gives judges "an ill-defined and uncertain power to substitute their judgment for that of administrative agencies with respect to policies embodied in legislation, much of which is the subject of expert knowledge and experience."

Thus, they believe, a judge

Continued on Page 5

ARGUS

The Pacific Northwest's Independent Magazine of News, Comment and Opinion

Vol. 74, No. 12 | Seattle, Washington, March 24, 1967 | PRICE TWENTY-FIVE CENTS

Polluters Are Winners . . .

Continued from Page 1

in a pulp mill county can decide that revocation of a waste discharge permit by the new Water Pollution Control Commission is not what the Legislature intended, rather than merely determining if the agency had "substantial evidence" the law was being flouted.

The bill originally would have permitted the court to set aside an agency's order if it were "clearly erroneous in view of the entire record as submitted." Pulp lobbyists succeeded in adding the phrase ". . . and the public policy contained in the legislation authorizing the decision."

Forecasts Confusion

Peck predicts the amendment, which is unlike anything found in any other state's Administrative Procedures Act, will "give rise to confusion, uncertainty and expensive litigation."

Pollution opponents already were displeased at losing from the main pollution bill a "summary abatement" clause to require an immediate shutdown of a violator. They fear the Administrative Procedures amendment will continue long court cases by which the pulp mills have staved off for years state attempts to force them to clean up the water they discharge back into the rivers and Puget Sound.

As passed, the pollution bill requires the state to give 24 hours' notice to a mill violating terms of its waste permit. Then the pulp firm could have a hearing, after which, if it refused to comply with the permit, an injunction could be obtained to shut down its mill. During the appeal hearing the pulp company can demand on the injunction, the judge could substitute his decision for the Legislature's intent.

How It Was Done

Hallauer says the pulp firms agreed, at the end of 18 months of hearings on the pollution bill, that they would not oppose it if he took out the summary abatement clause.

But while the Administrative Procedure bill was grinding through the Legislature the pulp lobbyists asked Uhlman, chairman of the Senate Judiciary Committee, to go along with three amendments. He agreed to two, but turned down the third. The lobbyists then succeeded in having it added in the House. When the bill got to the Senate "the pressure was terrific," Hallauer was told by several senators who had agreed to back him.

Some others, however, most from pulp mill areas, caved in under the lobbyists' barrages and voted for the amendment.

Delay Now Certain

When Governor Dan Evans failed to "item veto" the public policy clause from the bill this week, it became a part of state law.

"It is unclear how much authority state agencies have now," Hallauer says. "It means readjusting a lot of things. It will be several years before we know what the case law is on the subject. Now we may be in court two, three or four years until we get a Supreme Court decision. Previously some cases have been in court up to five years. We were trying to get rid of that and take care of them promptly."

The polluters won again.

Olympia, Washington.

"The pulp mills research program was established at the University of Washington in January, 1944...Primary emphasis was to be placed on studies of waste materials."

"Present support of this program comes from seventeen members of the pulp and paper industry. To date, the cumulative total expenditures are about $600,000 or only $2,000 per mill per year." (Emphasis supplied.)

"As yet, physical application of this research has not resulted in any major waste abatement in the Puget Sound area."

Pollution produced by the following mills with their population equivalents as compiled from the transcript takes into consideration only B.O.D. (bio-chemical oxygen demand). It must be remembered also that there are very serious toxic or poisonous effects on marine life from the pulp mills sulfite waste liquor discharges into our public waterways.

Anacortes area, Scott Paper Co. - discharges pollution, equivalent to the untreated sewage of about 480,000 people.

Port Angeles area - Fibreboard Paper Products Co. - Discharges pollution, equivalent to the untreated sewage of about 260,000 people. Rayonier, Inc. - discharges pollution, equivalent to the untreated sewage of about 1,500,000 people. Crown Zellerbach Corp. - discharges pollution, equivalent to the untreated sewage of about 360,000 people.

Bellingham area - Puget Sound Pulp and Timber Co. (now under another name) - discharges pollution, equivalent to the untreated sewage of about 1,000,000 people.

Everett area - Simpson Lee Paper Company - discharges pollution, equivalent to the untreated sewage of about 72,000 people. Scott Paper Co. - discharges pollution, equivalent to the untreated sewage of about 3,500,000 people. Weyerhaeuser Co. - discharges pollution, equivalent to the untreated sewage of about 1,300,000 people.

Again quoting from transcript:

"It can be seen that in the Everett area alone there is approximately 4,800,000 population equivalent contributed by these mills. This exceeds the population of the city of Los Angeles."

"It can be seen from the above figures that approximately 210,000,000 gallons per day of waste waters are discharged from these mills into the waters of Puget Sound and the Strait of Juan de Fuca, having a total population equivalent of roughly 8,400,000."

* * * * * * * *

The population of the State of Washington is 2,853,214. The above figures or data have had very little publicity. It is to be noted that this does not include other pulp mills such as sulfate or Kraft type mills and other industries around the State polluting our public waterways. For example, the Kraft mill at the mouth of the Puyallup River, pollutes equivalent to the untreated sewage of 300,000 people.

Great stress is being placed on domestic type pollution control with consequent large scale programs going on into the tens of millions of dollars, but it is ironic that very little or nothing is being done to eradicate industrial wastes of all types, such as pulp mill wastes, and the pollution from pesticides and detergents, also produced by industry.

Secretary of Interior Udall's words are very timely when he stated the following: "...and the truth of the matter is, nothing has been done - very little has been done at the local level, usually because some of the people that pollute—industries—are very powerful at the local level and have a great deal to say about local legislation, and the same thing, at times, at the state level." (Page 13, CBS Reports, "The Water Famine", CBS

TACOMA SPORTSMEN'S CLUB

Television Network, copyright Columbia Broadcasting System, Inc. Oct. 19, 1961).

Submitted by John C. Migdula, Chairman
Pollution Eradication Committee
Tacoma Sportsmen's Club

Nov. 15, 1963

Addendum: Under Federal Law 89-234, Water Quality Act of 1965, the states must set adequate standards "for the prevention, control, and abatement of water pollution" by June 30, 1967, otherwise the Federal Government will do the job. September, 1966.

- - -

MR. HARRIS: I am sorry, I have one more.

CHAIRMAN STEIN: Go right ahead.

MR. HARRIS: There is a gentleman who would like to present some petitions for consideration of the Conferees and for entering in the report, if this is in order.

CHAIRMAN STEIN: How long are the petitions? What is the bulk? How many pages?

MR. ELLIS OGILVIE: It will be about 20 pages.

CHAIRMAN STEIN: About 20 pages. Without objection, we will accept those as an exhibit.

(The petitions referred to are marked Exhibit 8 and are on file at the FWPCA Headquarters in Washington, D.C., with copies on file at the FWPCA Regional Office in Portland, Oregon, and the State of Washington WPCC office in Olympia, Washington.)

CHAIRMAN STEIN: At this point, I think the Conferees will recess until a quarter after 4. At the first recess we will consider the request, as I understand it, made by all the pulp and paper mills that the record be held open for two weeks for the submission of additional data. I think the determination of the Conferees on that question will determine whether we push on to attempt to come to conclusions and recommendations now or we wait until we get that data.

So if it is agreeable, we will proceed.

Does anyone have anything else to say?

DR. GILSHANNON: Mr. Chairman, my name is Dr. B. J. Gilshannon--

CHAIRMAN STEIN: Will you come up here, sir? We don't want to cut anyone off.

DR. GILSHANNON: I am Dr. Gilshannon and I would like to make a statement for the Lake Whatcom Improvement Committee.

CHAIRMAN STEIN: We will have one more statement. This always happens at these Conferences. You should have been in touch with Mr. Harris. We don't want to cut anyone off, but I assume this is the last statement. If anyone else has to make a statement, I suggest you get in touch with Mr. Harris.

May we have that statement now, sir?

STATEMENT OF DR. B. J. GILSHANNON
CHAIRMAN, EXECUTIVE COMMITTEE
LAKE WHATCOM IMPROVEMENT COMMITTEE

DR. GILSHANNON: I wish to introduce Mr. Bill Dittrich, a member of our committee, who will make this statement, sir.

MR. HARRIS: Doctor, will you--

CHAIRMAN STEIN: Would you identify yourself for the record?

MR. HARRIS: And your affiliation.

DR. GILSHANNON: Yes. I am Dr. B. J. Gilshannon. I am a retired industrial surgeon. I am Chairman of the Executive Committee of the Lake Whatcom Improvement Committee, an organized citizen's group in Whatcom County.

According to your request, I will stop here and let Mr. Dittrich read the statement for you.

CHAIRMAN STEIN: Mr. Dittrich, will you identify yourself with your full name?

STATEMENT OF WILLIAM J. DITTRICH
MEMBER
LAKE WHATCOM IMPROVEMENT COMMITTEE

MR. DITTRICH: My name is William Dittrich. I have been asked on behalf of our committee to present this statement.

Would you wish me merely to summarize it?

CHAIRMAN STEIN: That would be helpful, if you wish, and you may be assured that the Conferees will fully consider your statement as written.

Without objection, the full statement will be entered into the record as if read.

(The statement referred to appears on pages 422b to 422n.)

MR. DITTRICH: We prepared the statement under the assumption that:

1. In developing policies and procedures for enhancement of marine waters, it is of utmost importance to consider problems and practices along the entire tributary watercourse and to examine alternative long-range solutions to problems.

2. That Whatcom Creek is an exceedingly important tributary which by virtue of the diversion of water from the Middle Fork of the Nooksack River into it can be viewed as part of the Nooksack system.

3. That problems and practices along a given watercourse must be related to total area-wide water resource needs.

4. That social, political, scientific and economic factors are inextricably linked in pollution problems and therefore a wide range of facts need to be

examined.

We present thirteen facts and findings, delineated rather briefly, and a fourteenth and final one which we give emphasis to and which is perhaps more relevant to discussion of the current attitudes in general by industry, agriculture and local governments towards matters of water quality. It has to do with an incident which we refer to as Exhibit No. 18, I believe it is, in the list of exhibits that appear in the appendix.

The point is this, that:

"1. In spite of all the lip service which has been given in various official circles over the years to the need for attention to the purity of the source of Whatcom Creek.

"2. In spite of developing State and Federal concerns for long-range planning.

"3. In spite of the existence of a city, county and regional planning council's attempting to meet Federal support criteria for sensible water resource concerns.

"4. In spite of the tremendous body of literature describing sensible watershed management practices for water boards to be guided by---.

"The following situation obtains:

WILLIAM J. DITTRICH

"The Federal Government has recently allocated some 1.3 million dollars in support of a water system improvement and a filtration plant costing roughly 3 million dollars. The plant is to filter water withdrawn from a water supply which has a garbage dump within the watershed.

"The situation is so ludicrous, one is prompted to say no more, but that does not solve the problem. If we were to investigate the situation to try to bring about a change we would probably find that:

"a health department spokesman might say, 'the dump is unauthorized';

"a city spokesman might say, 'It is not in our jurisdiction';

"a county spokesman might say, 'Are they really dumping there?'

"and so the circle of confusion continues."

(Laughter)

"Means should be found to delegate authority and assign responsibility more precisely."

And paraphrasing, "As the saying goes, 'actions speak louder than words,' a situation such as this cries sham and makes mockery of the support program. State and Federal agencies should seek means of avoiding situations like this."

At the risk of belaboring the point, calling attention to Exhibits 18 and 19, they relate to the incident just described.

"Taken together, they provide the best evidence we have in our files for the kinds of ills our Nation is suffering in the water pollution field. These problems, we can see, do not just happen in other areas of the Nation. They happen in the State of Washington--even, of all things, in Whatcom County. We should like to illustrate them by comparing what is happening in our area with what others have said about the problem.

"Take first the statement by Carr in Reference 5:

"'Even the U. S. Public Health Service got itself involved in a scandal when it was revealed that one of its officials had promised the Massachusetts authorities that Federal enforcement would not be initiated. In 1963, Governor Endicott Peabody requested Federal help, but the Public Health Service was refused data by the Massachusetts Department of Public Health, which would not name any polluters. (We assume that this might be true both of industrial and governmental polluters--especially governmental. This is especially interesting since the watercourse which interests us most does empty into Bellingham Bay between municipal and industrial waste discharge points.)"

And we have seen today in movies what they are like.

"In the light of this statement, consider now Exhibit 18. The picture shows the Health Department sanitarian with a county commissioner standing on a garbage dump located within a domestic watershed (in which pulp and paper interests have large holdings). The caption beneath the photo calls attention to the water-dampened ground in the upper right of the picture. (Wet even in the driest summer in Washington in years).

"We have no reason to question honest reporting so let us examine what responsible public servants are saying to the public via the press. The citizenry is led to believe "new procedures" of maintaining garbage dumps solve pollution and fire problems. On what evidence is this based? If it is true, the world awaits the announcement of this new technique.

"The article accompanying the picture then goes on to say east lakeshore residents 'charge' that water from the dump empties into Lake Whatcom. Then it continues they 'claim' this adds to pollution problems. (Do health authorities have objective evidence to show that this is not true?)

"We forgive the paper for its lack of objectivity in portraying concerned residents who withdraw water for domestic use directly from the lake in a somewhat belligerent light. Thousands of people drink raw water from the lake regularly. Rather, we would think that responsible public health personnel would not rest until adequate analyses have been made to determine many possible types of contaminants which might be leached from the dump. We presume that public health authorities in discharging their responsibilities properly, must do some detective work on the side in the interest of preventing problems before they occur. Taxpaying residents in the East Lake area should, we believe, be able to expect that adequate thorough analysis is being made to determine extent of any hazards. Citizens are driven to make 'charges' and 'claims' for obvious reasons.

"With what vigor, foresight and resources are responsible officials pursuing the problem? We note the accompanying article says that 'crews cover the refuse at least weekly'. Costs for this are not mentioned, but caretaker costs alone are $1,440 a year.

"Compare now the $1,440 caretaker costs on

WILLIAM J. DITTRICH

the watershed dump with the $1,500 special assessment requested by the Regional Planning Commission for next year for 'comprehensive' county-wide, water-sewer study (as evidenced in Exhibit 19). Is this really evidence of the 'comprehension' of the problem and representative of the values placed on this resource? With what vision do our planners 'plan'? And what stand do elected representatives take?

"Compare with what one of the Nation's foremost authorities on water pollution problems recently said (in Reference 14):

"...there are three elements involved: technical knowledge to which research continually adds--money--and enforcement. We have enough of all of these to check pollution and reverse the tide right now. Technical know-how is available for resolving most of the pollution problems now. It will be forthcoming for those problems which still require answers. In the matter of money, it is inconceivable that the richest country in the world that has developed the most sophisticated methods of financing would find this an insuperable problem...who can believe that we will not be able to arrange the required financing for cleaning up our valuable waterways. Where the technical knowledge and the money are both available but reluctance and foot dragging persist in their application, we have the enforcement authority to see that they are put to work to end pollution."

"As a citizens group we agree that success can be achieved in surmounting these problems. We offer our thanks to the Conference for its concerns in pursuing solutions and offer our support.

"Attempts by local groups to investigate problems like these and to seek solutions have consistently been met with official roadblocks. In our opinion, if problems like these are left to local and State authorities for this solution, the status is not likely to change.

"We are not prepared to say that the Puget Sound Task Force is the best agency to conduct the needed investigations and studies, but we are pleased to note that in the guidelines set forth in Senate Document 97, 87th Congress (Reference 15) the commission given to the Task Force covers the areas of primary concern to us as residents of the Lake Whatcom watershed. The Task Force perhaps would be in the best position to conduct investigations and carry out needed studies in depth since their study program is already in progress.

"We note further that the Task Force guidelines state:

"'Well being of all of the people shall be the overriding determinant in considering the best use of water and related land resources. Hardship and basic needs of particular groups within the general public shall be of concern but care shall be taken to avoid resource and development for the benefit of the few or the disadvantage of many. In particular, policy requirements and guides established by the Congress and aimed at assuring that the use of natural resources, safeguards the interests of all our people shall be observed.'

"Our experience has been that official concerns for Lake Whatcom do not extend south of Strawberry Point (beyond the area of city water intake). Agricultural, mining and forest products operations take place principally south of Strawberry Point. In discussions of water quality in Whatcom County, these potential contributions to pollution are rarely if ever mentioned.

"We feel that the apathy and reluctance to energetically pursue corrective measures and adopt sensible plans can best be overcome through objective analysis by external groups. The means, resources and authority of Federal agencies, we believe, are needed to investigate these problems, especially those involving heavy investments of public funds.

"In conclusion, we would like to express our thanks to the Conference for the opportunity to express our views.

(The foregoing statement and appended exhibits are marked Exhibit 9 and are on file at the FWPCA Headquarters in Washington,D.C., with copies on file at the FWPCA Regional Office in Portland, Oregon, and the State of Washington WPCC office in Olympia, Washington.)

CHAIRMAN STEIN: Thank you, Mr. Dittrich.

Any comments or questions?

Thank you very much. You know, when we transferred from the Public Health Service to the Interior Department I thought one of the unearned increments I was going to get was no more dump problems, but I find since I have been over there we have been pretty busy, and I don't want to deprecate this problem at all. The Conferees will give it careful consideration.

You know,when I went to undergraduate school, which was a long time ago in the 30's,we used to learn about the Holy Roman Empire, and that,we were told,was neither holy nor Roman nor an empire. These dumps any more are called sanitary landfills,and from the nature of complaints the people think a lot of them are neither sanitary nor land nor a fill.

But I think we will have to revise our schedule and the Conferees, I hope, can come back with an announcement at 4:15, at least on the procedural question, and then we will decide if we can go into further executive session or not.

A STATEMENT

Presented to

JOINT FEDERAL - WASHINGTON STATE POLLUTION CONTROL CONFERENCE

In the Matter of

POLLUTION OF WATERS OF PUGET
SOUND, STRAIT OF JUAN DE FUCA,
TRIBUTARIES & ESTUARIES

by

LAKE WHATCOM IMPROVEMENT COMMITTEE

SEATTLE, WASHINGTON

SEPTEMBER 6, 1967

* * * * *

September 6, 1967

Mr. Murray Stein, Chm.
Federal - State of Washington
Pollution Control Conference
Seattle, Washington

Dear Mr. Stein:

The enclosed statement is submitted as our contribution to the conference being held in the matter of Pollution of Waters of Puget Sound, Strait of Juan de Fuca, Tributaries and Estuaries being held this date in Seattle, Washington. We appreciate the opportunity to present it.

In behalf of the Committee, I am,

Very truly yours,

Dr. B. J. Gilshannon

Dr. B. J. Gilshannon
Chairman, Executive Comm.
Lake Whatcom Improvement
Committee

BJG

Enc.

This statement is presented on behalf of the Lake Whatcom Improvement Committee - an organized citizen's group representing residents and property owners outside the city limits of Bellingham, in the Lake Whatcom area in Whatcom County. The names of committee members and a map of the areas they represent appear as EXHIBIT I in the appendix to this statement.

In preparing this statement, we presume the same objectives and requirements mentioned in the proceedings of the first session of this conference (Ref. 1, Vol. I) obtain.

We ask for the opportunity to make this presentation in hopes that it will make a positive contribution to the deliberations of the conference. We do not wish to seem or be presumptious.

Among many assumptions underlying our presentation, a few are particularly prominant. We assume that:

1.) In developing policies and procedures for enhancement of marine waters, it is of utmost importance to consider problems and practices along the entire tributary water course and to examine alternative long-range solutions to problems.

2.) That Whatcom Creek is an exceedingly important tributary which by virtue of the diversion of water from the Middle Fork of the Nooksack River into it, can be viewed as part of the Nooksack System.

3.) That problems and practices along a given water course must be related to total area-wide water resource needs.

4.) That social, political, scientific and economic factors are inextricably linked in pollution problems and therefore a wide range of facts need to be examined.

In this vein then, we submit the following facts and findings to the conference for discussion: (Order of listing does not imply priority of concern.)

1. The pollution of the Whatcom Creek watercourse has long been recognized.

   a.) In early days when farming, mining, logging and lumber mill operations were begun, concerns for pollution were expressed. Evidence for this can be found in newspaper files dating back fifty years.

   b.) In engineering studies for flood control in 1946 (See Exhibit 2), a proposal was made to divert the waters of the South Fork through Lake Whatcom. Three major benefits in addition to flood control were recognized.

      1.) Domestic water supply improvement by introducing pure silt-free water.

      2.) Hydroelectric potential - self liquidating at lowest rates.

3.) Harbor decontamination by carrying industrial and municipal effluents to areas of greater tidal action.

Obviously pollution of the watercourse was recognized as a major problem.

c.) A study in 1953 by U. S. Dept. of Agriculture, Bellingham Chamber of Commerce and Realty Board concludes: (See Exhibit 3)

> "The lake and lake shore are now used as a recreational, residential and industrial area, creating a pollution problem of major proportions."

2. The source of the Whatcom Creek (Lake Whatcom) serves as a domestic water supply. In this regard:

a.) Heavily silted Middle Fork water (approx. 65,000,000 gals/day) are introduced into Mirror Lake. Water then flows through Anderson Creek into Lake Whatcom. In its passage to the lake it traverses heavily contaminated barnyards.

No information seems to be available on siltation rate, but to an untrained observer, it is apparent that Mirror Lake is being ruined by the glacial silt, and that generated as a result of logging operations.

b.) Except for level, there is no regulation of this supply. Alternative solutions to lake level problems were known in 1946. (See Exhibits 2 and 3)

c.) There are no city, county or state policies for regulation of municipal supplies. (See Exhibit 4)

d.) Concern for coliform in domestic water has been expressed. Attention to viruses not. Viruses have only recently been recognized as a cause of water-born disease (Ref. 12). Identification of viruses is at best difficult, and the absence of the standard coliform indicator organism, coliform bacteria, may not assure freedom from virus (Ref. 13).

3. Attitudes towards domestic supplies are lax.

a.) In one of the definitive studies of some of the surface waters in our area (Ref. 2) we read on page 114, "All cities should collect at least one bacteriological sample per month and the Whatcom County Health Department has adopted a policy of trying to collect at least one sample per year from every community supply". Thirty-five domestic supplies are listed on page 115, excluding Bellingham as of 1960.

Further, on page 123 (Ref. 2) we read:

"No biological tests have been conducted in the study area, for no special problems have occurred to warrant such tests."

b.) The total number of domestic supplies in the county is not precisely known. A survey currently underway, recently reported in the local paper, gave last count as being over 100. This is to be noted in light of the fact that a regional planning council, originally seated in February, 1958, finally disbanded in June, 1959, for lack of projects of mutual interest (See Exhibit 5). Counting water districts would not have been an exceedingly difficult undertaking for planning staffs.

4. Fundamental attitudes about environmental preservation appear to be incompatible with quality.

In a recent Water Systems Study (Ref. 3) we read, "The actual cost of water will determine whether or not reclamation (raw material) facilities will be incorporated into plant facilities. It is indicated that water demand (hence presumably discharge of wastes) would be reduced roughly 50% with reclamation of raw material and reuse."

5. No uniformity of water cost policy.

a.) Industrial users enjoy low rate, long term, non-renegotiable contract. (See Exhibit 6)

b.) City users are unmetered.

c.) Areas contiguous to city pay considerably higher rate than city residents.

6. There is no systematic publicly sponsored or supported study program to obtain evidence on the quality of the environment or man's impact on it (Pollution Control Study).

a.) Western Washington State College Institute for Fresh-Water Studies has conducted limnological investigations on the lake. These studies produce some relevant data but are no substitute for pollution control studies. (See Exhibit 7)

b.) The Health Department does some sampling on the watershed intake and swimming areas.

c.) Information on water quality not readily accessible to public. (See Exhibits 8 and 9)

7. The makeup of "advisary committees" to responsible agencies in many instances does not represent a broad segment of interests in the community and hence by often accepted standards is not truly advisory.

8. Contribution of coliform to Inner Bellingham Bay by Whatcom Creek is masked by inefficiently operating municipal disposal system. (Ref. 4)

a.) "In 1949, the North Side sewage treatment plant, with a designed capacity of 3.5 MGD, commenced operation. Today (1957) the average daily summer flow is 5 to 5.5 MGD; night summer flow is about 3 MGD. Flow in excess of 5.5 MGD is by-passed into Bellingham Bay and cannot be measured." (See Exhibits 10 and 11)

b.) Considering the inefficiency of the municipal sewage treatment facilities, the problem of adding additional load through extension of sewer lines outside the city needs careful attention.

c.) Construction of lagoons may not be desirable because of the problem of climatic conditions influencing the operational efficiency and perhaps not solving the problem of nutrient addition to the lake.

9. The Lake Whatcom watershed, which is the source of Whatcom Creek, has not been officially defined for watershed management purposes.

a.) The area involving the headwaters of the Middle Fork is recognized. (See Exhibit 12)

b.) Other areas involved are:

1.) The developed areas shown in Exhibit 1.

2.) Approximately 18,000 acres under pulp and timber ownership.

3.) Other publicly owned land, i.e. schools, state.

c.) Lack of firm policies and management practices has resulted in the lowering of property values and tends to discourage development. (See Exhibit 13)

10. At recent water quality hearings in Mount Vernon, an official representative opened his remarks with the statement, "Whatcom County is blessed with an abundance of pristine pure water". Statements such as this, which bear an element of truth, are greatly misleading to the public. It has been shown in 1953 (Ref. 9) that:

a.) The vast Nooksack watershed contains much water important to fisheries. (See Exhibit 14)

b.) Lake Whatcom and Whatcom Creek are important fishery areas. (See Exhibit 15)

c.) That there are numerous possible reservoir sites. (See Exhibit 16)

d.) Storage combined with complete utilization of the ground water reservoir is capable of providing water for future needs and allow nearly a million acre feet annually to enter the Sound as stream flow. (See Exhibit 17)

In spite of the above, it is obvious that the waters become polluted because

a.) the City of Bellingham was officially informed that its water supply does not meet standards of quality for interstate use as set by U.S.P.H.S.;

b.) the state finds Bellingham Bay in a deplorable condition. (See Exhibit 18)

Somehow we ruin our "pristine pure" water. In fact, as indicated in points 3 and 6 above, since no analysis is systematically made, we are not really sure how "pristine" they are.

11. The criteria for cost-benefit ratio on major projects needs examination.

    a.) Quality factors and esthetic considerations seem often to be neglected or minimized. Edfro dam site good example:

    The quality of the waters of the South Fork of the Nooksack and its value as domestic water have long been recognized. (See Exhibit 2 and 16)

    As the population of this area grows, the demand for water-based recreation will also increase. It is estimated, for example, that Whatcom County had recreation days demand in 1965, was 3,302,000 and in 1975 will be 6,096,000. Whatcom, being the largest fresh-water lake, will no doubt be heavily used.

    A preliminary land use plan for the Whatcom watershed is based on the assumption of full development - which ultimately must cope with attendant pollution problems and be consistant with good watershed management practice. It therefore seems reasonable to assume that some time in the future because we do not have a completely controlled watershed, that one might be needed. (Edfro Dam for example.)

    There is the possibility of at least developing and preserving for future needs an excellent water supply, but interest seems to be waning in this matter. The City of Bellingham has suddenly and quietly relinquished its water rights on the South Fork of the Nooksack (See Exhibit 19) and the Corps of Engineers seems to give emphasis to recreational use of an impoundment on Edfro Creek as a means of economic justification. (See Exhibit 20)

    We would consider it proper to encourage the development of policies which would give emphasis to developing protected watersheds. This one (if feasible for dam) would seem to be most ideal - even for smaller communities.

12. Leadership and data are needed.

    a.) Carr (Ref. 5) has pointed out that, "Most efforts to protect our dwindling clean water reserves have been blocked by political self-interest..." Navigation and recreation are two non-withdrawal uses of water which have been established (Ref. 6) as contributing factors to water pollution. Strong leadership is needed to bring together all owners and users of the watercourse. Many understandings need to be examined such as the statement in a recent publication of the National Association of Manufacturers entitled "Water in Industry" which says "Typhoid fever cases are still the best measure of the efficiency of water treatment facilities" (Ref. 7). As laymen, we are not at all sympathetic with this archaic attitude in this day and age.

b.) Our Regional Planning Council, in order to satisfy federal criteria, has let a contract for Phase I of a two-phase engineering study. Studies such as these only review existing data (which is sparce and in some needed areas non-existent) and require some field sampling. Studies of this kind do not generate new data. We suggest that means must be found to establish adequate long range data gathering programs which will assure adequate data for sound decision making and provide adequate surveillance. Perhaps federal agencies are best equipped to do this. As Hayes and Herring have pointed out (Ref. 10), "Before these man-made problems (pollution) can be reduced or eliminated, we must first apprise the characteristics of the watershed that determine man's use of the area.

13. Information is not freely exchanged.

a.) In the comprehensive report of the National Academy of Sciences (Ref. 8) we read on page 18, "Expert knowledge of pollution to be found in universities, major government agencies, and the headquarters staff of large corporations often does not filter through to smaller agencies and to the field structure, and not infrequently is treated as privileged information because of its possible impact on the public.

b.) The matter of availability of information has been an issue locally. (See Exhibit 9) We believe the public has a right to know and a genuine desire to rectify pollution problems inasmuch as they effect the health and well-being of all.

The conference no doubt finds that problems on waters tributary to Puget Sound need to be viewed in light of facts such as these. Perhaps Whatcom County is atypical. We think, however, it is not.

Minimal action or total inaction on the part of local governments have created a need for state and federal controls and standards. We recognize the need for standards and policies for quality enhancement and are pleased that visionary requirements are being developed (Ref. 11).

The final point which we present to the conference is very relevant to the development policies or criteria for support of improvement projects. Situations such as we describe can very easily and quickly lead to an erosion of respect for state or federal requirements and authority. If we are to have them, they must be meaningful and enforceable. The situation in our area is this:

1.) In spite of all the lip-service which has been given in various official circles over the years to the need for attention to the purity of the source of Whatcom Creek (Lake Whatcom).

2.) In spite of developing state and federal concerns for long-range planning.

3.) In spite of the existence of a city, county and regional planning council's "attempting" to meet federal support criteria for sensible water resource concerns.

4.) In spite of a tremendous body of literature describing sensible watershed management practices for water boards to be guided by---.

The following situation obtains:

The Federal Government has recently allocated some 1.3 million dollars in support of a water system improvement and a filtration plant costing roughly 3 million dollars. The plant is to filter water withdrawn from a water supply which has a garbage dump within the watershed.

The situation is so ludicrous, one is prompted to say no more - but that does not solve the problem. If we were to investigate the situation to try to bring about a change we would probably find that:

a.) a health department spokesman might say "the dump is unauthorized";

b.) a city spokesman might say, "it is not in our jurisdiction";

c.) a county spokesman might say, "are they really dumping there?"

and so the circle of confusion continues. Means should be found to delegate authority and assign responsibility more precisely.

It seems only reasonable to assume that if responsible local officials were genuinely concerned about good watershed management practice that some arrangement could be worked out to eliminate this dump.

We note however that:

a.) Dumping hours are posted on the road not 300 yards from the lakeshore.

b.) Instead of posting "no dumping" signs - only one was posted admonishing "no fires allowed on this dump". The existence of the signs gives evidence that the county is aware of the dump, authorized or not.

c.) There is no evidence as far as we are aware of anyone being restrained from using this dump.

d.) There is evidence that when the roadside drainage ditch would not take the runoff - county equipment was sent to improve the drainage to the lake, and

e.) Water managers make no comment, and take no stand.

As the saying goes - "actions speak louder than words". A situation such as this cries sham and makes mockery of the support program. State and federal agencies should seek means of avoiding situations like this.

Parenthetically, it should be made clear that our group is not opposed to filtration. Our position has consistently been that:

1.) Long range technical and economic benefit studies need to be made in the water resource area.

2.) Sound decision-making is enhanced if objective evidence is at hand.

3.) When a comprehensive plan has been completed and estimated costs for all needs known, then decisions regarding most beneficial and sound expenditures can be made. (In this light the filtration plant has not been demonstrated to be the wisest first step, since interim measures were available.)

Now, at the risk of belaboring a point, we wish to call to the attention of the conference our Exhibits 18 and 19. They relate to the incident just described and in our opinion represent a classic example of the juxtaposition of political, scientific, economic and social factors.

Taken together, they provide the best evidence we have in our files for the kinds of ills our nation is suffering in the water pollution field. These problems, we can see, do not just happen in other areas of the nation. They happen in the State of Washington - even, of all things, in Whatcom County. We should like to illustrate them by comparing what is happening in our area with what others have said about the problem.

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In the light of this statement, consider now Exhibit 18. The picture (a picture of contradiction) shows a health department sanitarian with a county commissioner standing on a garbage dump located within a domestic watershed (in which pulp and paper interests have large holdings). The caption beneath the photo calls attention to the water-dampened ground in the upper right of the picture. (Wet even in the driest summer in the state in years).

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With what vigor, foresight and resources are responsible officials persuing the problem? We note the article says that "crews cover the refuse at least weekly". Costs for this are not mentioned, but caretaker costs alone are $1440/year.

Compare now the $1440 caretaker costs on the watershed dump with the $1500 special assessment requested by the Regional Planning Commission for next year for the "comprehensive" county-wide, water-sewer study. (See Exhibit 19) Is this really evidence of the "comprehension" of the problem and representative of the values placed on this resource? With what vision do our planners "plan"? What stand do elected representatives take?

Compare with what one of the nation's foremost authorities on water pollution problems recently said. (Ref. 14)

> "...there are three elements involved: technical knowledge to which research continually adds - money - and enforcement. We have enough of all of these to check pollution and reverse the tide right now. Technical know-how is available for resolving most of the pollution problems now. It will be forthcoming for those problems which still require answers. In the matter of money, it is inconceivable that the richest country in the world that has developed the most sophisticated methods of financing would find this an insuperable problem...who can believe that we will not be able to arrange the required financing for cleaning up our valuable waterways. Where the technical knowledge and the money are both available but reluctance and foot dragging persist in their application, we have the enforcement authority to see that they are put to work to end pollution."

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In conclusion, we express our sincere thanks to the conference for the opportunity to express our views.

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Yes, Mr. Poston has one more.

FEDERAL PRESENTATION

(CONTINUED)

MR. POSTON: I have just received a communication from the Department of Commerce and Economic Development, General Administration Building, Olympia, Washington, from Daniel B. Ward, Director, addressed to the Federal Water Pollution Control Administration, Northwest Regional Office, Portland, Oregon. It is short and with your indulgence I will read this statement and introduce this as part of the record:

DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT
General Administration Building
Olympia, Washington 98501

Daniel B. Ward, Director Daniel J. Evans, Governor

"September 5, 1967

"U. S. Department of the Interior
Federal Water Pollution Control
Administration
Northwest Regional Office
Portland, Oregon

"Gentlemen:

"The waters of Puget Sound are part of our great natural resources in the State of Washington and it is essential that these waters be available to future generations. In setting water quality standards and taking corrective action, however, care should be exercised that such standards and corrective measures should be constructive and positive in approach rather than punitive to those who have been assumed to be sources of pollution in the past. In protecting the use of the water for one purpose, such use should not destroy the water for another purpose.

"Full consideration should be given so that the economic activities that will support all the other uses of the water will not be seriously impaired or destroyed. We can no longer afford the luxury of exclusive uses of our resources by one user. We must share all our resources amongst our various activities and endeavors.

"I urge you to consider carefully the standards that are set and the manner in which these standards are enforced.

"Sincerely yours,

Daniel B. Ward
Director."

CHAIRMAN STEIN: We will stand recessed until half past 4.

(RECESS)

CHAIRMAN STEIN: May we reconvene.

I think we have, as usual, unanimous agreement among the Conferees and we have maintained our record with the State of Washington. I think this is a record of

Federal-State cooperation in these matters.

We would like to express our appreciation to all of you for coming, staying with us and participating in the Conference. After listening to the statements, looking at the exhibits and analyzing the material here, I am sure we appreciate the fact that we are dealing with a very, very complex problem, one in which we find many, many different views. We may find that all the issues have been engaged and all the points of view have been substantially expressed in the Conference.

However, because of the complexity of the problem, we have examined very carefully the request of the mills to keep the record open for two weeks. In order to provide a complete record, the Conferees have determined that the record will be kept open for these two weeks. However, the Conferees believe that this should be a two-way street. During these two weeks the Conferees and their staffs will be giving intensive thought to this problem, analyzing it, and developing possible conclusions and recommendations. By the way, during this time, any interested parties may put in additional information if they wish.

I might say any information should be made out in two copies--one copy sent to Mr. Roy Harris and one to Mr. Richard Poston. I can get any information I wish from Mr. Poston, since we are in daily communication.

During this time, in addition to our receiving information from you people, since we believe this is a two-way street, the Conferees have decided that they would have a technical team, comprised of representatives of the State and the Federal Water Pollution Control Administration of the United States Department of the Interior. They may be calling upon particularly the pulp and paper mills in question and they may be seeking some information from you. I hope this information will come both ways.

After we see how this information is coming in, the Conferees will announce an executive session. The executive session will be held in this area, perhaps even in the city. We will announce the date of this executive session. The executive session participants, of course, are the panel group here, Mr. Poston, Mr. Harris and myself, and we will announce the place and date that we will have the executive session. It is expected that the date of this will be within the week or so following the two weeks that we are keeping the record open, depending upon the schedules we have and the complexity of the material.

Subsequent to the executive session, we will come to a public room such as this and make an announcement.

I don't know how you people feel about this, but I do think we have aired the problem thoroughly. I think we are proceeding on this problem the only way I know how—in the American democratic legal tradition. The process is abrasive at times, but I think it achieves the best results. If we all keep our heads, operate in good faith and hopefully are not too intransigent, maybe we can come up with a solution that is going to be satisfactory to all or almost all of us or at least one that we can all live with and one that will preserve and conserve the waters of the Puget Sound for a maximum number of water uses.

Mr. Harris, do you have anything to add?

MR. HARRIS: I have nothing.

CHAIRMAN STEIN: Mr. Poston?

MR. POSTON: No.

QUESTION: Just to verify the date, I conclude it to be to and including September 21. Is that correct?

CHAIRMAN STEIN: Yes. We are going to give you the most liberal interpretation of that. Okay?

QUESTION: What date?

CHAIRMAN STEIN: We will include through the 21st, yes. In other words, any material you get in by the close of business on September 21 will be accepted to each of these offices. Is that clear?

Yes.

QUESTION: The men on your technical team, who will speak for them?

CHAIRMAN STEIN: The technical team will be designated by Mr. Poston and Mr. Harris.

QUESTION: You haven't designated them yet?

CHAIRMAN STEIN: No. They will designate the technical team as they look at the staff. These people, and I appreciate this because we have a large organization too, it may be the same technical team throughout or it may be a different group coming to your mills. But it is expected that there will be an exchange, you will be notified who these people are, and they may be coming to your mills for a discussion.

Are there any other questions for clarification on this?

I want to again give you our policy on all this, at least mine, and I can speak for no one else. As many of you know, when you can find me, I am available for discussion at all times. You know, because I travel across the country, sometimes I am not in the office. But I am just as far away as your telephone, and when it comes to clean water and you call me, we accept the calls. So if you have any problems or any questions, call up. You know, we strike a gold star every time we get one of these massive corporations making a direct call, because that is an expert. We figure we are ahead.

Are there any other questions or comments? If not, we will stand recessed until the executive session.

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(Whereupon, the Conference recessed at 4:45 p.m.)

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